

VOL. 43, No. 5

MAY 1975

## CONTENTS

### TECHNICAL —

A Mini Size Field Strength Meter	11
Commercial Kinks	25
Making the Most of Mercator — Part 2	4
Modifications to the VK3ABP 2 and 6 Metre Converters	16
Try This — Modifications to Miniscope Soldering Iron	16
Try This — Yaesu T101 Audio Gistlick	8
Try This — 2 Wire Reversing of AC/DC Series Motors	13
<b>GENERAL —</b>	
DX QSL Notes	21

### The Melbourne Science Museum Amateur Radio Station

The Shack	12
VK-ZL Oceania DX Contest — 1974 Results	23
1975 John Moyle Memorial National Field Day Results	19

### DEPARTMENTS —

Contests	17
Hamads	26
Letters to the Editor	19
QSP	3, 21, 24, 26
Silent Keys	26
VHF-UHF — an Expanding World	17
20 Years Ago	25

### FRONT COVER

The equipment racks of amateur radio station VK3BW/VK3AOM permanently on display at the Melbourne Science Museum. See story on page 9.  
Photo courtesy of Science Museum of Victoria, Photographic Section.

### STOP PRESS

NOVICE LICENCE APPROVED  
See Page 22

# HAM RADIO Suppliers

## Special Announcement!

DISPOSAL BRANCH AND ELECTRONIC BARGAIN CENTRE  
is now open at

390-392 BRIDGE ROAD, RICHMOND — PHONE 42 5174

Plenty of bargains for the radio amateurs or the hobbyist owing to the recent tariff cuts. We have obtained large quantities of components, test equipment, complete and incomplete radios, transceivers, tape recorders, panel meters, valves, transistors, transformers. All at throw-away prices. Be early. Plenty of Opening Specials.



## RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286 All Mail to be addressed to above address

Our Disposals Store at 104 HIGHETT ST., RICHMOND (Phone 42-8136) is open Mondays to Fridays, 10.30 a.m. to 5.0 p.m., and on Saturdays to midday.

### KENWOOD/TRIO TS 520 5 BAND SSB TRANSCIVER



#### Specifications

Frequency Range: 80 metre band — 3.50 to 4.00 MHz; 40 metre band — 7.00 to 7.30 MHz; 20 metre band — 14.00 to 14.35 MHz; 15 metre band — 21.00 to 21.45 MHz; 10 metre band — 28.00 to 28.50 MHz; 28.50 to 29.10 MHz; 29.10 to 29.70 MHz; WWV — 10.00 MHz.

Mode (Receive only) USB, LSB, CW.  
Input Power: 160 watts on 80 to 15 metre band.  
140 watts on 10 metre band.  
Nett amateur prices:

TS 520 \$550.00 with PTT mike, SP 520 Speaker.

### DA 2000 STEREO AMPLIFIER



20 Watts R.M.S. per channel. Circuitry uses 21 ICs, 18 Silicon Transistors. Magnetic, Ceramic, Tuner and Tape Inputs. Remote Speaker Operation and Protected Output Stages. Dimensions 374 mm (W) x 108 mm (H) x 198 mm (D). . . . . \$75 + P&P

B.S.R. STEREO AUTOMATIC TUNEABLE. Fitted with Ceramic Cartridge. Complete with base and hinged plastic cover. . . . . \$59 + P&P

PUSH BUTTON CAR RADIOS. Complete with Speaker and lock-down Antenna. 12V dual polarity. \$29 + P&P

### 1 WATT 2 CHANNEL TRANSCIVER

with call system. 27.240 MHz, 12 transistor. PMG approved type. Fitted with 27.240 MHz.

#### Specifications:

Transmitter — Crystal controlled: 1 Watt input power to RF stage. Receiver — Crystal controlled super-heterodyne circuit with 445 Kc IF. Antenna — Built-in 60" telescopic whip antenna. Audio Output — 0.8 Watt maximum. Power supply required — 12 volts DC (Eight 1.5 volt DC battery cells). Loud-speaker — 2 1/4" PM type (built-in) functions as microphone on transmit.  
**\$39.50 each**

### 144-148 MHz TWO METRE EQUIPMENT NOW WITH 6 CHANNELS



KEN KP-202, 2W, 144 MHz band  
P.M. Hand held transceiver with  
crystals for 6 channels, Ch. 40-50,  
R1, R2, R3, R4  
**\$169**

KCP-2 NICAD battery chargers &  
10 Nicad batteries  
**\$35**

Genuine leather carrying case for  
KP-202  
**\$5**

## BARGAIN PRICED SPECIALS

2 METRE MOBILE ANTENNA ROOF  
MOUNT ANTENNA AND BASE  
**\$8.50**

2 INCH SQUARE CLEAR FACE  
0-1 MA METERS  
Calibrated 0-60  
**\$3.00 EACH**

EDGEWISE 0-1 MA METERS  
2 1/4" x 1 1/4" FACE, 3" DEEP  
Calibrated 0-5  
**\$3.00 EACH**

We now have available ex stock  
the following equipment for the  
amateur:

YAESU MUSEN FT101B  
SSB/AM 240V AC & 12V DC  
operation,  
160-10m transceiver  
**\$585**

RINGO AR-2  
135-175 MHz. Antenna has 3.75 dB  
gain  
**\$27**

YAESU FT/FP200 TRANSCIVER  
P.S.U. COMBINATION  
**\$475**

MIDLAND 13-870D  
AM, 23 channel, 11 metre trans-  
ceivers, 12V DC operation  
**\$100**

MIDLAND 13-893  
SSB/AM, 23 channel, 11 metre  
transceivers, 12V DC operation  
**\$195**

We also have in stock the following 1 Watt  
hand-held transceivers for 27 MHz hand-  
phone service which are P.M.G.-type ap-  
proved:—

STRATOCOM TC10 2 channel with  
call tone . . . . . **\$39.50 ea.**

LAFAYETTE HA310 3 channel . . . . . **\$73.50**

Additional crystals available for 27.240  
MHz, 27.880 MHz and 27.910 MHz  
at . . . . . **\$6.50 pair**

27 MHz centre loaded fibreglass cowl  
mount mobile antenna with base  
and co-ax . . . . . **\$25.50**

27 MHz centre loaded fibreglass roof  
mount mobile antenna with base **\$16.90**

27 MHz gutter mount mobile antenna  
with co-ax and PL259 plug fitted **\$22.50**

# amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA, FOUNDED 1910



MAY 1975  
VOL. 43, No. 5  
Price, 70 cents

Registered at the  
G.P.O. Melbourne for  
transmission by Post  
as a Periodical—  
Category "B"

## QSP

### The Crossroads . . .

Published monthly as the official journal by the Wireless Institute of Australia.

Reg. Office:  
2/517 Toorak Rd., Toorak, Vic. 3142  
P.O. Box 150, Toorak, Vic., 3142

**Editor:**  
Bill Roper VK3ARZ

**Assistant Editor:**  
Bruce Bathols VK3UV

**Technical Editors:**  
Bill Rice VK3ABP  
Ron Cook VK3AFW

**Publications Committee:**  
John Adcock VK3ACA  
Rodney Champness VK3UG  
Syd Clark VK3ASC  
Ron Fisher VK3OM  
Ken Gillespie VK3GK  
Neil Osborne VK3YEI  
Howard Rider VK3ZJY  
Roly Roper VK3YFF  
Gil Sones VK3AUI

**Contributing Editors:**  
Brian Austin VK5CA  
Deane Blackman VK3TX  
Eric Jamieson VK5LP  
Jim Payne VK3AZT

**Drafting Assistant**  
Gordon Rowe L30187

**Business Manager:**  
Peter B. Dodd VK3CIF

**Enquiries and material to:**  
The Editor,  
PO Box 2611W, GPO Melb., 3001

Copy is required by the third of each month. Acknowledgment may not be made unless specially requested. All important items should be sent by certified mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying any reason.

**Advertising:**  
Advertising material should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: 24-8652.

Hamads should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 3rd of the month preceding publication.

**Printers:**



**penny printing co.**

33 Roberna Street,  
Mooraubin, 3189. Tel. 95 6462.

The Wireless Institute of Australia exists to provide a service for its members. Australians who are interested in amateur radio.

However, like many similar organisations, it has reached the stage where it cannot function effectively without paid staff.

The amount of work which can be expected from unpaid volunteers becomes increasingly difficult due to the many side attractions of the affluent society in which we live.

But paid staff means more money. More income from more members.

Why are only 50 per cent of the licensed amateurs in Australia members of their own radio organisation?

Surely not all of those 3000 non-members are inactive, or freeloaders. (Freeloaders. Non-members who reap the benefits of the expenditure of time and cash of members.)

If they are not members because of disenchantment with policies, facilities, or even personalities, then they are burying their heads in the sand.

They should become active members of the Institute and bring about change. After all, the Institute is only as good as its members, and it is a society of amateurs for amateurs.

One school of thought is that "AR" should provide the additional income. But "AR" barely stands on its own feet.

If the content was widened to include hi-fi, stereo, and other general electronics, the public may be interested in buying it on the news-stands. But then the magazine would cease to be "personal" to amateur radio.

How long is it since you put something constructive back into this fascinating hobby of ours? Attended a meeting, submitted an article to "AR", assisted one of the many groups in the Institute, signed up a new member?

Or are you just a taker?

The Wireless Institute of Australia is your society. And without your active assistance, IT WILL NOT SURVIVE.

**BILL ROPER, VK3ARZ**

#### MARITIME MOBILE, LAKE EYRE

Plans are well advanced for an expedition of Melbourne amateurs to Lake Eyre during May. Two members of the Publications Committee (VK3ABP and VK3YFF) among others, expect to operate maritime mobile on the HF bands from a sailing

boat for a period of about two weeks. It is also hoped to provide good publicity for amateur radio as well as Australia's impressive inland sea by producing a documentary movie of the expedition. Lake Eyre has been full of water for about two years and looks like remaining full for some time to come.

# making the most of mercator

## part 2

A. M. Phillips VK5ZU  
27 Prospect Terrace, Prospect, SA 5082

### SATELLITE TRACKING

The methods outlined in Part 1 (AR November 1973) are further developed to plot the path of a satellite in near-circular orbit and to determine its position in space and time with respect to a given observer, by use of a simple overlay.

### THEORY

The track of a satellite in circular orbit is typically as shown in Fig 7. It can be shown that the latitude of point B and its longitude with respect to point A, the ascending node, are related to the orbital inclination (angle BAC) and the orbital travel (angle AOB) as follows:

$$\sin \text{Lat } B = \sin \text{BAC} \cdot \sin \text{AOB}$$

$$\sin \text{Long } B = \frac{\cos \text{BAC} \cdot \sin \text{AOB}}{\cos \text{Lat } B}$$

Also, if "t" is time from ascending node  
Orbital travel angle  $\text{AOB} = t \times 360$   
period

If time intervals of four minutes are used in calculation, allowance can be made for the rotation of the earth simply by adding one degree of longitude for each four minutes.

Calculated data for the orbit of Oscar 6 is given in Table 2 and plotted in Fig 8.

Fig 9 shows the path of Oscar 6 in elevation. For a given elevation, "E", the angular range "R" can be computed as follows:

$$\sin F = 6370 \sin (90+E)$$

$$7830$$

$$R = 90 - (E+F)$$

giving the following values:

Elevation E						
(°)	0	15	30	45	60	75
Range R						
(°)	35.6	23.2	15.2	9.9	6.0	2.9

Circles of constant elevation (range), when plotted on a Mercator chart will appear as shown in Fig 10. The points of intersection of these curves with lines of given bearing at point A can now be computed, using the formulae derived in Part 1 and above as follows:

Given:

Example

Latitude "a" of reference point 35 deg

Bearing "b" at reference point 45 deg

Range "R" from reference point 23.2 deg

Compute:

$$s = \cot b \cdot \sec a \quad 1.221$$

$$y = \text{arc tan} \left[ \frac{s^2 + \tan^2 a}{s} \right] \quad 54.6 \text{ deg}$$

$$x = \text{arc cos} \frac{s}{s} \quad 29.8 \text{ deg}$$

$$0 = \text{arc sin} \frac{\tan y}{\sin a} \quad 44.7 \text{ deg}$$

$$0 + R \quad 67.9 \text{ deg}$$

$$\text{Lat } P = \text{arc sin} \left[ \sin (0+R) \sin y \right] \quad 49.1 \text{ deg}$$

$$\text{Long } P \text{ (from point 0)} = \text{arc sin} \dots$$

$$\left[ \frac{\sin (0+R) \cdot \cos y}{\cos \text{Lat } P} \right] \quad 55.0 \text{ deg}$$

$$\text{Long } P - x \quad 25.2 \text{ deg}$$

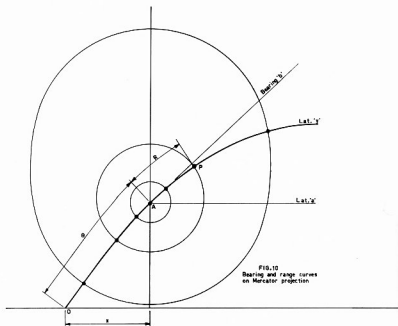


FIG.10  
Bearing and range curves  
on Mercator projection

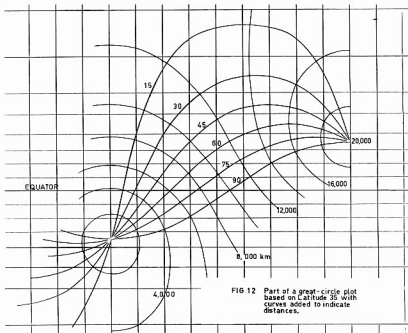
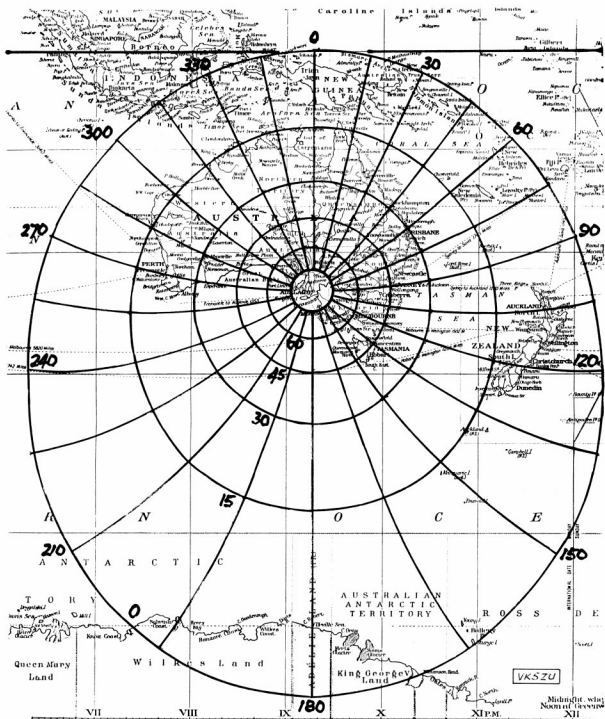


FIG 12 Part of a great-circle plot  
based on Latitude 35 with  
curves added to indicate  
distances.



Ascending Node - Northbound

250 240 230 220 210 200 190 180 170 160

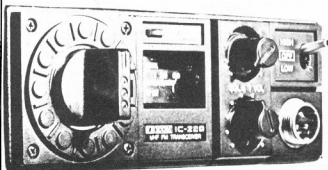


Ascending Node - Southbound

60 50 40 30 20 10 0 350 340 330

# Fantastic Offer

**TEN SETS TO BE GIVEN  
AWAY FREE**



## NEW ICOM IC22A

**STOP PRESS**

New City Store Open - 125 YORK STREET,  
(Opposite Queen Victoria Building - 100 yds.  
from Town Hall Station). Phone: 29 1126.

### ICOM IC22A 2M TRANSCEIVER

#### Features:

- 146-148 MHz in 22 Channels
- RF Out 10W/1W Switchable
- Mode F3
- Deviation 3-16 KHz Adjustable
- Dynamic PTT Mic Supplied
- 5 Helical Resonators in Front End
- Receiver Sensitivity 0.4uV, 20dB Quieting
- Audio Output 1.5W into 8 Ohms
- Power Requirements 13.5V  $\pm$  15%

The IC22A is Icom's new and improved version of the very popular IC22. The IC22A is ideally suitable for home or mobile use. We are offering this unit with 3 channels, i.e. channel 50 simplex and channels 42/54 and 48/60 repeat.

**ONLY \$200**

**NEW  
CATALOGUE  
OUT  
NOW**



**FREE in APRIL E.A.**

Dick Smith Wholesale Pty. Ltd.  
St. Leonards Head Office & Mail Orders:  
160-162 Pacific Highway, Gore Hill 2065  
Tel. 439 5311  
Bankstown: 361 Hume Hwy, Bankstown  
(Nr. Chapel Road), tel. 709 6600.

*Dick Smith has purchased a huge shipment of the very latest Icom transceivers.*

*Not only is this unit to be sold at a very competitive price but EVERY purchaser will help his Division of the WIA to obtain a FREE IC22A.*

For every ten units purchased, Dick Smith will donate one to your nominated Division or Club. These units are ideal for repeater use or WICEN emergency activities.

Yes, by making a large cash purchase of over 100 Icom IC22A transceivers, we have been able to get them at an incredibly low price. The savings are being passed on to you. The normal IC22A price is \$199 plus crystals at \$9.00 a pair.

**We have the IC22A INCLUDING 3 CHANNELS of crystals (normal price \$217) for only \$200.00 (P & P Insured anywhere in Australia \$3.00).**

**PLUS . . .**

**YOUR PURCHASE HELPS YOUR DIVISION OF THE WIA TOWARDS A FREE ICOM IC22A**

Remember:

- All units fully guaranteed 90 days
- Spares available
- Ex-stock availability

**PLUS**

- Our exclusive satisfaction guarantee - buy one, inspect it. If you aren't satisfied return it for refund less P&P costs. What could be fairer?

**PLUS EXTRA SPECIAL 240 V AC - 12 V DC fully regulated power supply, normally \$32 - however if ordered with an IC22A - ONLY \$26.00 plus P & P \$1.50.**

**PLEASE USE COUPON TO SPEED DELIVERY**

Dick,

Please rush me a brand new, fully guaranteed IC22A fitted with 3 channels of crystals.

Please allocate 10 sales points to the .....  
(club or section of WIA). I understand that when my nominated club/division gains 100 sales points you will present them with a FREE fully guaranteed unit.

Name \_\_\_\_\_ Callsign \_\_\_\_\_

Address \_\_\_\_\_

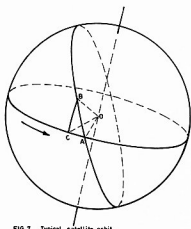


FIG. 7. Typical satellite orbit.

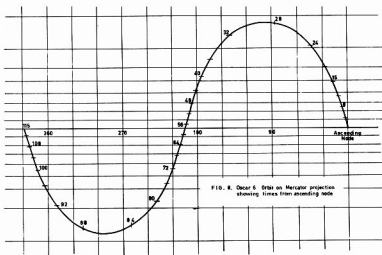


FIG. 8. Oscar 6 orbit on Mercator projection showing times from ascending node

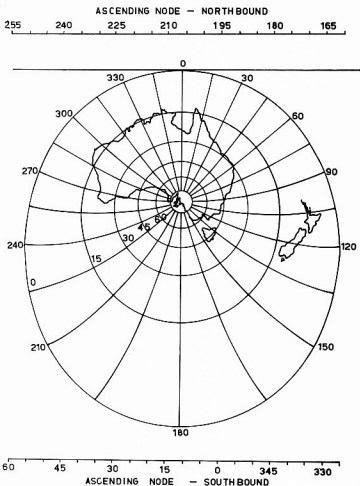
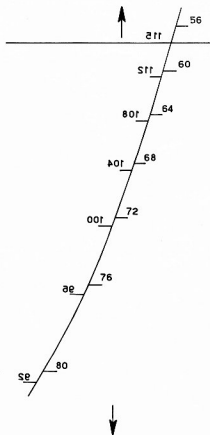


FIG. 11 (a) Bearing/Elevation chart for Oscar 6  
Altitude 1460 Km.



(b) Track of Oscar 6  
(Latitude 0-70°S)  
Showing times of ascending node

Repeat for all desired values of R—positive and negative. Repeat for next value of b.

#### APPLICATION

Using a Sharp Model PC-1001 programmable desk calculator, the complete plotting data was obtained in less than half an hour. Another half-hour was required to carry out the manual plot, the result of which is shown in Fig 11a.

That portion of the Oscar 6 orbit from 56 to 82 minutes after ascending node was then plotted on transparency to the same scale. (Fig 11b). By superimposing the two plots, with due regard to the longitude of the ascending node, the time and bearing of acquisition can be read off directly and the pass can be tracked in detail.

To cover the northbound leg, the transparency was reversed and time-markers from 92 to 115 minutes were added, together with the appropriate index for longitude of the ascending node.

The most time-consuming part of the exercise is the calculation and plotting of the bearing/elevation curves. To simplify this, the problem was fed to a Hewlett Packard Model 9810A Calculator and its

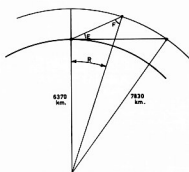


FIG. 9. Oscar 6 orbit in elevation.

associated X-Y plotter. The complete calculation and plot was then carried out in about two minutes.

Note: In plotting to Mercator's projection, if unit length is taken as one degree of longitude, then a point at latitude X will be  $131.9 \log - \tan (X + 45)$  units from the equator.  $10^2$

#### FEEDBACK TO PART 1

The method used above provides an alternative means of deriving the great-circles

shown in Fig 5 of Part 1, together with additional curves indicating distance from the reference point. Such a plot is shown in Fig 12.

Note: An angular range of 9 degrees represents 1000 km.

TABLE 2  
ORBITAL DATA RELATING TO OSCAR 6  
Orbital inclination 78.35 deg. Period 114.59 min

Time (mins)	Orbital Travel °	Latitude	Longitude, deg W from ascending node	
			Earth stationary	Earth rotating
4	12.5	12.3N	2.6	3.6
8	25.1	25.5	5.4	7.4
12	37.6	36.7	8.8	11.8
16	50.1	48.7	13.6	17.6
20	62.6	60.4	21.3	26.3
24	75.1	71.2	37.3	43.3
28	87.7	78.1	78.6	85.6
32	100.2	74.6	131.6	139.6
36	112.7	64.6	184.2	193.2
40	125.2	53.1	164.0	174.0
44	137.8	41.2	169.6	180.6
48	150.3	29.1	173.4	185.4
52	162.8	16.8	176.4	189.4
56	175.3	4.6N	178.1	193.1
60	187.8	7.7S	181.6	196.6
64	200.4	19.9	184.3	200.3
68	212.9	32.1	187.4	204
72	225.4	44.2	191.6	208
76	237.9	56.1	197.9	216.9
80	250.5	67.4	209.8	229.8
84	263.0	76.4	238.6	259.6
88	275.5	77.1S	295.4	317.4
92	288.0	68.7	328.2	351.2
96	300.5	57.5	341.1	365.1
100	313.1	45.7	347.8	372.8
104	325.6	33.6	352.1	378.1
108	338.1	21.4	355.4	382.4
112	350.6	8.2	358.1	386.1
115	360	0	360	388.75

#### FOOTNOTE:

Received recently is data relating to the orbit of Oscar 7 which indicates that, for all practical purposes, it is identical with that of Oscar 6. The comparative data is as follows:

	Oscar 6	Oscar 7
Inclination (deg)	101.6534	101.7287
Period (minutes)	114.994355	114.944785
Regression (deg)	28.74897	28.736
Semi-major-axis (km)	7832.583	7830.336

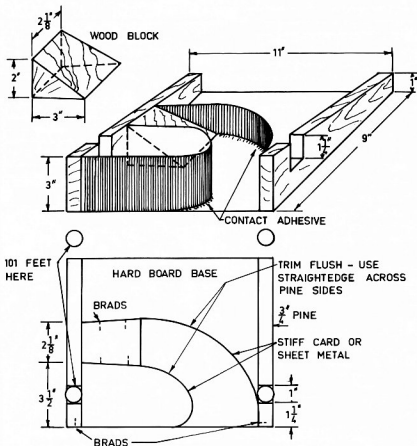
The differences are so small — much less than the plotting accuracy of the diagrams, that they will apply equally well to both Oscar 6 and Oscar 7.

## Try This

with Ron Cook VK3AFW  
and Bill Rice VK3ABP

#### THE YAESU 101 AUDIO GISLICK

Most 101 users find it hard to think up an improvement. Here's one if you have an hour to spare. I have found it works so well that I am going to paint it! Build it and you can remove those magazines or such used to prop it up, place the rig on top, locate the front feet into the slots provided and hey presto, you have real beat out front sound and a 101 that looks you right in the eye. The unit has no ill effect on the ventilation and will also serve as a mobile fitting.



# The Melbourne Science Museum Amateur Radio Station

Peter Cossins VK3BFG/T  
and David Turner VK3ADE

To the majority of people, mention of the word 'Museum' conjures up images of dusty old bones fussed over by ageing recluses and a place once visited when very young, probably on a wet day.

This picture however, is not accurate. There are collections, some of which seldom see the light of day, but the Science Museum has many activities going on, and mechanised displays to demonstrate fundamental principles to the delight of both young and old.

Over the past 103 years of its existence, the Science Museum has engaged in various activities involving the general public including the training of telegraphists (1873), lectures on geology, chemistry, etc. and more recently (1965), lectures on astronomy in the planetarium and the observatory. The latter service is provided by the Astronomical Society of Victoria, utilising both their own and Science Museum telescopes. Also on the staff of the Science Museum are five teachers seconded from the Education Department, who give demonstrations both at primary and secondary level on sound and light, including a CCTV link via laser. Other technological topics such as development of musical instruments, transport and communications are illustrated with items from the collections.

The Museum is always looking for ways to increase its activities, and resulting from a chance discussion with Jim Lloyd VK3CDR, in late 1973, a joint WIA/Science Museum radio station was conceived. The main objectives of this station were:

- to provide a facility to educate the public in radio communications, particularly amateur activities; and
- to accommodate the VK3BWI broadcast equipment.

After agreement on facilities and services to be provided by both parties, a suitable site was selected for the station. Consideration was given to staff access and attraction of visitors' attention. Visitors number 500,000 per year (one seventh of Victoria's population). The position on the ground floor of a gallery facing Swanston Street, although a premier position for operation, was quite distant from suitable roof top antennas (HF — 130m, VHF/UHF — 30m). Good quality UR67 and FHJ (Helix) co-axial cable was installed to overcome transmission losses. After nearly twelve months, stage one has been completed — comprising the installation and modification of VK3BWI equipment, the construction and installation of a control console, and a console with HF and VHF transceivers for the Museum station VK3AOM.

The VK3BWI console is a multi-program source, three-output audio, system to drive the transmitters which are housed in racks.

RF feedback problems encountered were largely solved by the addition of LP filters inserted at strategic points within the console. Much of the equipment which was transferred from the old QTH at 478 Victoria Parade, was in poor repair and was given an extensive face-lift.

At the time of writing this article, the 432 MHz transmitter has been built but no antenna has yet been installed. All co-axial feeders are in a sealed duct and hence an interesting problem is posed for any further expansion of frequencies. The possibility of duplexing transmitters into the single cable feeding a dual resonant antenna is one possible solution.

As mentioned earlier, there are two foot top antenna sites, one directly above the transmitting room for VHF (which can be seen from Swanston Street) and one towards the rear of the building for HF.

Antennas are as follows:—

- 160m — Vertical with top hats and counterpoise,
- 80/40/20 — Inverted vees (a tri-band beam and tilt over tower is planned for stage 2)

- 53.032 MHz —  $\frac{1}{2}$  vertical
- 52.525 MHz —  $\frac{1}{4}$  G-plane
- 144.5 MHz — Stacked clover leaves
- 146.1 MHz —  $\frac{1}{2}$  vertical/10 element beam

432 MHz — Still in planning

From a public point of view the station demonstrates a range of equipment used by amateurs from the ex Navy A14 (80 and 40 Mx), amateur designed and constructed AM (160m, 2m, 6m, 70cm), modified commercial equipment (Ch 1, 6 FM), a 40m transmitter constructed from a kit, and state-of-the-art, a HF transceiver with digital readout and an autoscanner VHF transceiver. Public demonstrations have commenced and acquisition of gear for RTTY, SSTV and UHF TV is planned.

Comparison of these wide ranging current activities can be made with items in the Museum's collection, such as the receiver built by Max Howden VK3BQ in 1923.

If you are interested in operating or demonstrating in your field of interest, please contact Peter VK3BFG/T on (03) 231-2778.



Peter Cossins, VK3BFG seated at the operating position of VK3BWI/VK3AOM. This photo was taken during the callback immediately after the opening ceremony.

# SIDEBAND ELECTRONICS SALES and ENGINEERING

## TRIO-KENWOOD

Model TS-900 de-luxe transceivers, with PS-900 AC supply-speaker unit	\$800
Model TS-520 AC-DC transceivers with external speaker	\$550
External VFO for the TS-520	\$80
CW filter for the TS-520-900	\$40
TV-502 2M. transvertor for the TS-520, just plug it in and switch over to 2M. SSB operation	\$200
Model QR-666 all-band coverage receiver	\$300

## YAESU MUSEN

Model FT-101-B AC-DC transceivers	\$575
Model FT-200 AC transceivers with AC FP-200 supply	\$400
Digital Frequency counters	
model YC-335-D 0-200 MHz	\$250
SPECTRONICS DD-1 digital counter for the FT-101-B	\$150
All TRIO-KENWOOD & YAESU MUSEN transceivers come complete with original English manual, all crystals for all available bands, a P.T.T. dynamic microphone and a bonus free S.W.R. Meter.	

## HY-GAIN ANTENNAS

14 AVQ 10-40 M. vertical 19' tall, no guys	\$65
18 AVT-WB 10-80 M. vertical, 23' tall, no guys	\$90
TH 3 JR 10-15-20 M. junior el. Yagi 12' boom	\$135
TH 3 Mk3 10-15-20 M. senior 3 el. Yagi 14' boom	\$180
TH6DXX 10-15-20 M. senior 6 el. Yagi 24' boom	\$225
204-BA 20 M. monoband 4 el. full size Yagi 26" boom	\$190
HY-QUAD 10-15-20 M. full size Cubical Quad	\$200
Magnetic base mobile whip 108 MHz and higher with 18'	
RG-58U cable and coax plug	\$18
BN-86 baluns	\$18

## CDR ROTATORS

AR-22-R for 2 & 6 M. and small h.f. beams	\$50
AR-20-R for 2 & 6 M. beams	\$40
HAM-II with re-designed control box	\$150
All three models for 230 V AC complete with indicator-control units.	
4-conductor light cable for AR-20-22	20 cents per yard
12-conductor light cable for HAM-II	30 cents per yard
8-conductor heavy duty cable for HAM-II	60 cents per yard

## BARLOW WADLEY RECEIVERS

Model XCR-30 Mk II 500 KHz to 31 MKz continuous coverage communications receivers, crystal controlled reception of AM-USB-LSB-CW	\$250
--	-------

## 27 MHz EQUIPMENT

MIDLAND 5 WAM 23 channels transceivers, with PTT mike 12 V DC	\$95
MIDLAND 5 WAM 15 W PEP SSB 23 channels transceivers PTT mike 12 V	\$175
SIDEBAND Brand One Watt model NC-310 hand-held transceivers	\$50
SIDEBAND Brand 5 WAM 15 W PEP SSB 23 channels transceivers, with noise limiter-blanker, PTT mike, 12 V DC	\$190

## 144 MHz TWO METER EQUIPMENT

MULTI-7 10 W output FM transceivers, 24 channels with crystals for 10 channels 40 to 60, includes all Australian repeaters and anti-repeater operation, with PTT mike and mobile mounting bracket, 12 V DC operation, still only	\$225
KEN PRODUCTS KP-202 2 W output FM hand-held transceivers with the hottest receiver available anywhere, 6 channels now with crystals for channels 40 and 50 and all 4 repeaters	\$150
KCP-2 battery chargers and 10 NICAD batteries	\$35
Leather carrying case for the KP-202	\$6
Stubby flexible helical whip antennas for the KP-202	\$6
KLM ELECTRONICS solid state 12 V DC 2 M. amplifier, 12 W output, automatic antenna change-over when driven, ideal for mobile use with the KEN KP-202	\$50

All prices quoted above are net SPRINGWOOD, N.S.W., cash with orders, sales tax included in all cases, subject to changes without prior notice. No terms nor credit nor COD available, only cash and carry, no exceptions. All-risk insurance available for 50 cents per \$100 value, minimum insurance \$0.50. Allow for freight, postage or carriage, excess will be promptly refunded ... MARY & ARIE BLES, Proprietors.

# SIDEBAND ELECTRONICS SALES and ENGINEERING

P.O. BOX 23, SPRINGWOOD, N.S.W. Postcode 2777

TELEPHONE, DURING BUSINESS HOURS ONLY! STD 047 511-394

## POWER OUTPUT METERS

Galaxy RF 550A with 6 position coax switch	\$75
--	------

## SWR METERS

Midland twin-meter type for 52 Ohms, up to 1 KW on hf	\$22
---	------

## BALUNS

Japanese baluns, 1 KW PEP 75 Ohms impedance only	\$10
--	------

## MOBILE ANTENNAS

MARK helicals 6 feet long		
	HW-80 for 80 M.	\$18
	HW-40 for 40 M.	\$18
	HW-20 for 20 M.	\$16
	high power KW-40 for 40 M.	\$25
	tri-band HW-3 for 10-15-20 M.	\$25
Swivel mobile mount & chrome plated spring for MARKS		\$12
ASAHI model AS-303A set of 5 whips 10 to 80 M.		\$90
Complete with ball mount and spring		
AS-2-DW-E 1-4 wave 2 M. mobile whip		\$8
AS-WW 1/2 wave 2 M. mobile whip		\$15
AS-GM gutter clip mount with cable & connectors		\$10
M-RING body mount and cap for 2 M. whips		\$5

## COAX CONNECTORS

Amphenol VHF types Standard PL-259, Angle male-female, T-connector, RCA male to Amphenol female adaptor. All models	\$1 each
---	----------

## CUSH CRAFT ANTENNAS

DGPA 52 to 27 MHz adjustable ground-plane	\$25
LAC-2 lightning arrestors	\$6

## CRYSTAL FILTERS

9 MHz similar to the FT-200 ones, with 2 carrier crystals	\$35
---	------

## POWER SUPPLIES

240 V, AC to 12V DC 3 to 3.5 Amps, regulated	\$35
--	------

## SPECIAL

KEN KP-12A speech processors, 230V AC, contain a complete SSB generator, 10-7 MHz filter, clipper, etc.	\$100
---	-------

# a mini size field strength meter

Maurie Evered, VK3AVO  
13 Sage Street, Oakleigh, 3186

A field strength meter is one of those instruments that falls into the "useful but not essential" class. However, since this one was first constructed, it has worked overtime. I am sure other operators will find it as useful as I have.

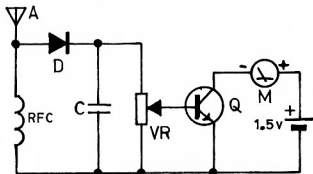
This field strength meter could not be simpler. It consists of only seven components including the meter and battery. It was built on a piece of Veroboard and everything is mounted in a 4" x 2" x 1 1/4" metal box. The "antenna" is a piece of brass welding rod about six inches long. It passes through a rubber grommet and is soldered directly to the Veroboard.

The circuit is very straightforward. Transistor Q1 is normally non-conducting because there is no external bias applied to its base. RF voltage developed across RFC1 is rectified by D1 and applied to the base of Q1 which then conducts according to this rectified RF voltage. VR1 is to keep the meter reading at 1/2-3/4 full scale deflection. Once this circuit is enclosed in its metal box it is virtually a DC one, so layout is of little importance. There is little more to be said about the instrument itself, it is so simple. However, a few words should be said about its use.

If the meter is used to measure relative transmitter output into the regular station antenna (as it is usually used at this QTH)

then readings are quite straightforward and follow those obtained on the SWR meter in its "Forward" position.

The field strength meter is completely



RFC-2.5 mH

D - 0A91

C - .001

VR - 50k

Q - BC 108 (2N3565)

M - Any meter 0-1mA

(or more sensitive)

A - 6 inch length brass  
welding rod.

Independent of coupling to feedlines, and so gives added confidence compared to any other method of measuring that is used. Just sit the field strength meter in a convenient position on your operating table or desk.

If the meter is used to monitor antenna adjustments the situation is more complex because:-

1. The "antenna" of the field strength meter should have the same polarisation as the transmitting antenna under test.
2. Measurements should be made at a distance of several wavelengths from the antenna being tested. If made within one wavelength the meter may respond to the combined induction and radiation fields rather than the radiation field alone.
3. If an adjustment alters the angle of radiation of the antenna under test it may decrease the measured field strength at ground level although the total radiation level may have increased.

This meter has been used from 3.5 to 30 MHz satisfactorily. If it is to be used at 1.8 MHz with a low power rig it may be necessary to extend the short antenna with a piece of wire and a clip. If this is done it performs very well at this lower frequency.

This little meter is very cheap and easy to construct and once built becomes a very useful addition to the range of instruments in any shack.

In this photo of Maurie's neat station the field strength meter can be seen to the left of the FT101B.

# the shack

J. A. Gazard, VK5JG  
39 Glenhurst St., Woodville South, S.A. 5011

The construction of an outdoor building to house the amateur station need not necessarily require the services of a builder. VK5JG describes one way in which you may be able to "roll your own", subject, of course, to the agreement

All over the world the place in which the amateur operates his equipment is called "The Shack". The dictionary defines a of your local council. shack as "a roughly built hut" and it is probable that the name evolved when in the early days, the roaring spark gap working late into the night made it necessary for the amateur to move into an outhouse so described.

Today, there are still advantages in having an operating room outside the main residence. Two of these are the ease of leading-in the aerial and the avoidance of interference with the remainder of the family. With the increase of new operators from Youth Radio and the coming of the novice licence, more shacks will be required and the following suggestion is offered for cheap and easy home construction.

## MATERIALS

Common covering material for walls and roof are corrugated galvanised iron or asbestos cement sheets. The costs per square foot of galvanised sheets and 6 inch corrugated asbestos cement sheets are ap-

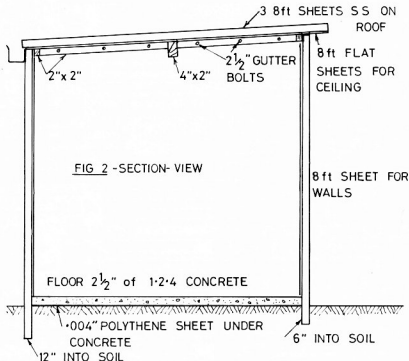


FIG 2 - SECTION-VIEW

Double lap to allow roof overhang if AC sheet used

This sheet 5' high with space over for window

SIZE APPROX. 10'x7'

Arrangement of sheets  
Wall-8 off 8 ft. sheets  
1 off 5 ft. sheets  
Roof- 3 off 8 ft. sheets

DOOR

FIG 1

proximately the same. However "super six" asbestos cement sheets are sufficiently strong and rigid to stand up as walls, and support a roof without timber framing. Used thus they are by far the cheapest material for walls. Also, with no timber framing, erection is simple and no special skills are required.

The super six sheets have a wide corrugation at one side which laps with the narrow one at the other side. If two sheets are set up at 90 degrees with the wide corrugations together, it will be found that the edges overlap and can be bolted together with 1" x 1/4" gutter bolts to form a corner.

## LAYOUT

The layout of sheets for a 10 ft x 7 ft shack is shown in Fig. 1. Gutter bolts are used to bolt the edges of all sheets together.

The bottoms of the vertical sheets can be set in a shallow trench and backfilled and rammed to hold them upright during construction. The trench need only be 6" deep on the high side, and with a 6" roof fall, will be 12" deep on the low side. It is best to lay out the walls flat on level ground first, with the laps nesting neatly, and drill the 1/4" holes for the gutter bolts with a masonry drill. Bolts can then be inserted quickly during erection, which should not be done in a gale!



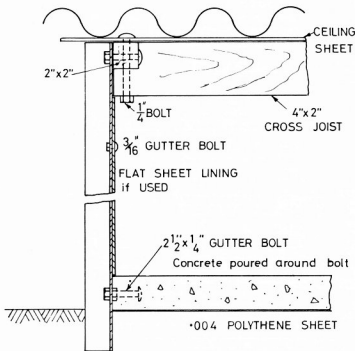


FIG 3 CONSTRUCTION DETAILS

#### PROCEDURE

It is possible for one man to erect the walls of a small shack in less than a day. The sloping tops of the side walls can be cut with a ceramic cutting disc set in an electric drill. Erection is commenced at one corner. The two sheets are carefully

set up at 90 degrees and clamped at the top with a G-clamp. Then the holes (4 per corner) are drilled and the bolts inserted. The corner will have sufficient stability to support two more sheets even if the trench is left unfilled. Around the top of

the sheets, lengths of planed 2 x 2 inch timber are bolted to the asbestos sheets, with 2 1/2" gutter bolts. This increases the rigidity and provides a method of fastening down the roof.

#### ROOF

The roof can be of galvanised iron or superfix. To provide a flat ceiling and block off the open spaces of the corrugations, sheets of flat asbestos are laid on the roof first and the corrugated sheets placed over them. Special screws are available for fastening the asbestos (if this is used) to the 2 x 2s.

When the roof is screwed down with two screws per sheet at each end, the structure becomes very rigid.

Aluminium foil can be laid between the flat asbestos and the corrugated sheet for heat insulation.

#### DOOR AND WINDOWS

One sheet left out of the wall provides a doorway and the use of a 5 ft sheet instead of an 8 ft sheet makes space for a window. The door and window frames can be made of 4 x 1 1/2". The doors will not be standard size and so will have to be made to fit. It is suggested that doors be framed in 2 x 1 inch and 3/16" hard-board be glued and screwed to each side. For a 3 ft x 3 ft window, half (about 18") could be plain glass and the remainder louvres.

If it is desired to line the shack, flat asbestos sheets can be bolted inside to the super-six with 3/16" gutter bolts. This lining, which can be painted, greatly improves the appearance and insulation.

The shack shown in the sketches is 3 sheets by 2 sheets — approximately 10 ft x 7 ft but other sizes can be used. The largest shed built by this method has been 5 sheets by 3 sheets (16 ft x 9 ft). If super-six is used for the roof, one of the laps in the wall will have to be a double lap so that the roof will have an overlap at each end.

## Try This

with Ron Cook VK3AFW  
and Bill Rice VK3ABP

#### TWO-WIRE REVERSING OF AC/DC SERIES MOTORS

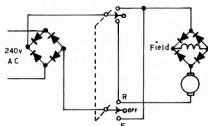
When the distance between shack and tower is a long one, it is desirable to keep the number of wires to the rotator down to a minimum. At the same time, those of us who make their own rotators find that the most inexpensive suitable motors are the series-wound AC/DC motors commonly used in electrical appliances. The problem is how to use these motors with the ON/OFF-reversing switch at the shack and still require only two wires to feed the motor.

The problem has been overcome here

by using two bridge rectifiers as shown in the diagram. The motor is supplied with DC via a bridge rectifier from 240V AC. The field, which is still used in series with the armature, is connected through another bridge rectifier which causes it to retain the same polarity at its terminals regardless of the armature polarity, which is controlled by the switch in the shack.

We use a little motor that previously drove a blower. It was found necessary to change the field position slightly in respect of the brushes to obtain similar torque in both directions, and a filter has been fitted near the motor to cut commutator noise down. The diodes in the bridges are normal 400 p.i.v., 0.5A rectifier types.

'Tubby' Vale, VK5NO



Two wire reversible AC/DC Series Motor.

# MAY IS VHF/UHF

**MANY NEW LINES IN STOCK OR ARRIVING SHORTLY**  
including the value-packed commercial quality **PFT-203 TRANSCEIVER**



The model PFT-203, originally designed for marine use in America, is a 30 watt plus, 25 channel mobile FM transceiver for the 2m amateur band. It is compactly housed in a metal cabinet of attractive appearance. The IF amp. frequencies are 10.7 MHz and 455 kHz, clear of HF amateur bands to reduce interference to a minimum. Excellent selectivity is assured by the use of a 2 pole crystal filter and three ceramic filters! A low pass filter is included in the antenna circuit for both transmit and receive. Incorporates power level adjustment and automatic SWR protection which does not cut the transmission on high SWR but reduces power according to SWR deficiency. Thus you can still transmit even with a relatively poor SWR . . . good for emergency, etc. situations. The use of a large area heat sink and PA transistor with power dissipation of 70W help to ensure trouble-free operation under arduous conditions. One channel provides priority "call-channel" operation.

## TECHNICAL DATA OF PFT-203

### GENERAL

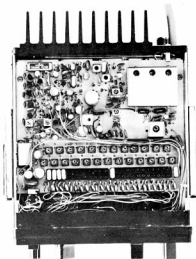
Frequency Coverage	140-170 MHz, factory adjusted to the 2m band
Number of Channels	24 Channels plus 1 memory channel
Maximum Bandwidth per Unit	2 MHz
Mode	F3 (Phase Modulation)
Power Source	13.5V DC ( $\pm 10\%$ ) Negative Ground
Power Drain	Receive 0.3A Transmit 5.0A/25W 1.2A/ 1W
Operating Temperature	$-20^{\circ}\text{C}$ to $+55^{\circ}\text{C}$
Antenna Impedance	50 ohms
Microphone	Dynamic 500 ohms
Dimensions	61 mm (H) x 166 mm (W) x 215 mm (D) or $2\frac{1}{2}'' \times 6\frac{1}{2}'' \times 8\frac{7}{16}''$
Weight	2.2 Kgs or 4.8 lbs.

### TRANSMITTER

Power Output	30 Watts or 1 Watt, switchable (max.)
Modulation	Variable capacitance phase modulation
Multiplications	12 Times
Frequency Deviation	12.5 kHz max. (adjustable)
Harmonics Spurious Radiation	2 $\mu$ W or less
Adj. Chann. Radiation	2 $\mu$ W or less
Frequency Stability	Not exceeding $\pm 0.001\%$ ( $-20^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ )
Mod. AF Response	0.3 to 3 kHz $+6\text{dB/Octave}$

### RECEIVER

Receiving System	Crystal controlled double superheterodyne
Frequency Stability	Not exceeding $\pm 0.001\%$ ( $-20^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ )
Intermediate Frequency	1st IF : 10.7 MHz 2nd IF : 455 kHz
Sensitivity	0.5 $\mu$ V or less at 20 dB QS
Selectivity	$\pm 10$ kHz at $-6\text{dB}$ , $\pm 20$ kHz at $-80\text{dB}$
Spurious Response	Greater than 60 dB
Spurious Radiation	0.002 $\mu$ W or less
Intermodulation	At least 75 dB down at $\pm 25$ kHz separation
Audio Output	1 Watt (less than 10% distortion)



**INTRODUCTORY PRICE — \$228**, includes crystals for B and one repeater chan. (advise chan. required), microphone, mobile mount, etc. Extra standard channels only \$8.00. Prices include S.T. Freight or postage and insurance extra (allow \$4.50). All sets pre-sales checked and covered by our 90 day warranty. Prices and specifications subject to change.

**AUSTRALIAN AGENT:**



**ELECTRONIC  
SERVICES**

60 Shannon St., Box Hill North, Vic., 3129.

Ph. 89-2213

OLD. MITCHELL RADIO CO., 59 Albion Road, Albion, 4010  
N.S.W. STEPHEN KUH, P.O. Box 56, Mascot, 2020

Ph 57 6530

Ph Day 667 1650

A.H. 371 5445

S.A. FARMERS RADIO PTY. LTD., 257 Angus Street, Adelaide, 5000

Ph 23 1268

W.A. H. R. PRIDE, 26 Lockhart Street, Como, 6152

Ph 60 4379

# MONTH AT B.E.S.



## TENKO 2XA

The Tenko model 2XA (similar to the Swan FM2XA) is a 10 watt, 12 channel 2m FM transceiver. Using dual gate MOS FETS in the front end it exhibits excellent cross modulation and overload characteristics. The 2XA comes complete with mobile mount, microphone, and DC power cable.

### TECHNICAL DATA:

Transmitter: Power output: 10 watts. Deviation:  $\pm 7$  kHz. Spurious Response:  $-60$  dB.  
Receiver: Sensitivity:  $0.5 \mu\text{V}$  for 20 dB quieting. Selectivity: 6 dB down at  $\pm 12.5$  kHz; 50 dB down at  $\pm 25$  kHz. Squelch sensitivity: Less than  $0.3 \mu\text{V}$ . Circuitry: Double conversion with IFs of 10.7 MHz and 455 kHz.

**INTRODUCTORY PRICE — \$169**, includes 3 JA channels and 2 Aust. channels. Extra standard channels, \$8.00.

## YAESU FT-620B

New model 6m SSB/AM/CW transceiver, illus. at right. **PRICE — including AM filter and crystal calibrator — \$468.**

**YAESU FT-220**, 2m SSB/FM/CW transceiver, latest model with crystals and mods for FM repeater operation. Similar appearance to FT-620B. Limited quantity only — **\$475.**

**YAESU FT-224**, 24 channel 2m FM transceiver — **\$259** with 6 Australian channels installed.

**YAESU FT-2 AUTO**, 8 channel, auto-scan 2m FM transceiver.

**YAESU S-200R**, 200 channel, frequency synthesised 2m FM transceiver.

### NEW FROM STANDARD CO.:

**SR-C146A**, 2m FM 2W output, 5 channel Walkie-Talkie. This superior quality transceiver comes complete with a leather carrying case, and auxiliary jacks are provided for external microphone, earphone, antenna and battery charger. Whip antenna telescopes down level with top of set.

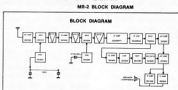
### TECHNICAL DATA:

TRANSMITTER:		RECEIVER:	
RF output	2 watts	Sensitivity	$0.4 \mu\text{V}$ or less
Modulation	$\pm 3\text{kHz}$ (adjustable)	Selectivity	60 dB down on adjacent channels
Spurious & Harmonics	More than 50 dB below carrier	Circuitry	Double conversion
FM noise	At least 45 dB		

**PRICE — \$158**, includes carrying case and 4 Channels (2 U.S. and 2 Aust.). Optional accessories extra, e.g. hand mic., stubby ant., charger, mobile mount adaptor, 230V AC home use adaptor.

### RECEIVER SENSATION

**MR-2 MINI-RECEIVER** for pocket use. A little larger than a cigarette packet, the MR-2 is a full double conversion crystal controlled VHF miniature receiver of really high quality. 12 channel capability. Delivery expected June/July with anticipated price under **\$100**, including self-contained Ni-Cad batteries, earphone, wire antenna, and battery charger. Crystals will be stocked for the 2m band.



**SR-C432A**, a new UHF, 70 cm handheld FM transceiver, output power 2.2 watts, with 6 channel capability (435 MHz crystals included). Similar appearance to the SR-C146 transceiver. **Price — \$235.**

**SR-C430** UHF 70 cm mobile transceiver, 10 watts FM, 12 channel (435 MHz crystals included). This would be the bargain of the year at the anticipated price of **\$268**, inc. mic. and mobile mounting bracket. Stocks expected in June, place your order now to avoid disappointment.



All prices Inc. S.T. Freight etc. extra. And . . . don't forget, your purchase from B.E.S. Includes pre-sales checking of sets plus our 90 day warranty.

AUSTRALIAN AGENT:

**bæil**

**ELECTRONIC SERVICES**

60 Shannon St., Box Hill North, Vic., 3129.

Ph. 89-2213

QLD. MITCHELL RADIO CO., 59 Albion Road, Albion, 4010  
N.S.W. STEPHEN KUHL, P.O. Box 58, Mascot, 2020

Ph 57 6830

Ph Day 667 1630

A.H. 371 5445

S.A. FARMERS RADIO PTY. LTD., 257 Anzac Street, Adelaide, 5000  
W.A. H. R. PRICE, 26 Lockhart Street, Como, 6152

Ph 23 1266

Ph 60 4379

# modifications to the VK3ABP 2 and 6 metre converters

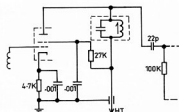
Geoff Wilson, VK3AMK  
7 Norman Ave., Frankston, Vic. 3199

It was with some delight that one of the technical editors, VK3ABP, received this article for perusal. He also has found an IF tuned circuit desirable in one case when an IF above 30 MHz was used. The article explains some of the factors involved in choice of IF, and how such a tuned circuit may be added where necessary.

The VK3ABP VHF converters need no introduction to anyone active on 2 or 6 metres over the last decade. There would probably be very few shacks that have not had at least one of these at some stage. I have lost count of the number that I have built and every one was a good performer. In the early days of Ch. 0 the 6m version seemed about the only converter capable of solving the cross mod. problem. Some idea of the success I have had can be seen from the DX of the last season: 2m, VK1-7 inclusive, 6m, VK1-0 & 2L1-4 inclusive, in addition to five JA call areas in other years. All signals received on the standard 2 or 6m version.

The trend today is to use 28 MHz as the tunable IF for VHF converters for a variety of reasons, not the least being the 2 MHz or more available compared with other bands. Unfortunately few receivers give their best performance at 28 MHz, especially when compared to say 80m where gain is usually more than adequate. My 6m converter, while a good performer and relatively free of cross mod, except when beaming directly at Ch 0, seemed to lack the sensitivity of the classic "R, TV & H" type converter which used a 6BQ7 front end. Unfortunately the latter was totally unsuited for operation in Ch 0 areas and had to be abandoned despite its previous excellent performance. My impression has always been that the 6m VK3ABP converter obtains freedom from cross modulation at the expense of gain.

The mixer stage output is untuned and the signal is coupled to the IF by an untuned cathode follower. Therefore the first tuned circuit at the IF is the front-end tuning of the receiver. I set out to see where some additional gain could be



MODIFIED MIXER CIRCUIT - FIG. 2

obtained without drastic modification to the converter, especially as the tunable IFs at 28 MHz were not as hot as they might be. The reason for using untuned circuits in the mixer and cathode follower areas appears to have been to make things as flexible as possible and allow IFs from BC upwards to be used.

The original mixer circuit is shown in Fig. 1 and the modifications in Fig. 2.

The 10 K resistor in the anode of the mixer section of the 6BL8 is replaced by a tuned circuit at the IF and tests on DX signals on both 2 & 6m have shown a very worthwhile increase in gain without increasing cross mod. The 6m version was simply peaked for maximum at 28 MHz but due to the gain of the 6ES8 cascode RF stage ahead of the mixer in the 2m version it was found necessary to back off the tuning slightly as the noise was too great and produced a standing S meter reading of about S6. By backing off the tuning until the S meter just reaches zero with no signal the gain is about right and should give somewhere in the vicinity

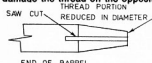
of 2 to 3 S points improvement over a converter without this modification. The 6m converter, due to the lower gain of the RF amp, does not give any noticeable increase in noise. During a recent 2m opening to VK5, I monitored the VK5VF beacon for long periods and found that the signal was in the noise and not moving the S meter at all without the addition of the tuned IF circuit but as soon as this was added the signal rose to about S3 and was quite clear. Also car ignition was much more pronounced and there was a noticeable rise in background electrical noise, inaudible previously. I made my tuned circuits up on Neosid formers and fitted cans, then soldered the tuned circuits in, directly replacing the 10 K resistor (15 K in the case of the 2m converter). Coil dimensions will vary of course depending upon the IF used. Should any instability result from the addition of the tuned circuits try a damping resistor across the coil; values probably between 2.2 K and 47 K would be suitable.

## Try This

with Ron Cook VK3AFW  
and Bill Rice VK3ABP

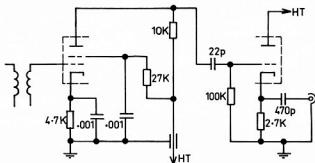
### MODIFICATIONS TO MINISCOPE SOLDERING IRON

After a period of use, the barrel (although made of stainless steel) oxidises in the thread where the bit screws in, leading to overheating due to poor contact and accelerating the oxidation process. Cleaning the thread with a 5/32" Whitworth tap helps for a short period, but erosion of the barrel thread leads to a poorly fitting bit. To overcome this, a slot was cut in the barrel with a hacksaw blade with the "set" ground off each side (so the cut will not be excessively wide). Cut through the thread on one side, being careful not to damage the thread on the opposite side,



the cut extending a little beyond the tapered part of the barrel. With a pair of fairly heavy pliers, carefully reduce the size of the thread portion by pinching together the cut. Try and maintain the threaded portion circular. Run a 5/32" Whitworth tap through to thoroughly clean the threads. Pinch the end in until a new bit is a firm fit, requiring pliers to screw it in. It pays to clean the thread with a tap each time a new bit is fitted and also check that the new bit is a firm fit in the threads.

C. P. Daw, VK2AGJ



6BL8 MIXER - CATHODE FOLLOWER - FIG. 1

# VHF UHF

## an expanding world

with Eric Jamieson VK5LP

Forrest, SA, 5233  
Times: GMT

### AMATEUR BAND BEACONS

VK0	VKDMA, Mawson	53.100
	VKQGR, Casey	53.200
VK1	VK1RTA, Canberra	144.475
VK2	VK2WLV, Sydney	52.450
	VK401D, Sydney	144.010
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52.600
	VK4WJ1, Mt. Mowbullen	144.400
VK5	VK5VF, Mt. Lofy	53.000
	VK5VF, Mt. Lofy	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTV, Perth	52.350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	144.500
VK7	VK7RTX, Devonport	144.900
P29	P29DA, Jam, Miungini	52.150
3D	3D3AA, Suva, Fiji	52.500
ZL1	ZL1VHF, Auckland	145.100
ZL2	ZL1VHF, Wellington	145.150
	ZL2VHF, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

The only item of likely interest in regard to beacons at present is the information from Bill VK2HZ to the effect that from his elevated site at Springwood in the Blue Mountains of NSW he monitored the Fiji beacon 3D3AA on 6/1/75 from 0200Z to 0600Z, being audible for the full four hours, very slow fade — not typical Es fading. Signal S8 at maximum down to S2 at times. Again on 7/1/75 the beacon was heard from 0830Z to 0900Z with signals peaking S3 about 0845Z, otherwise just being audible for most of the period.

If the beacon can be encouraged to keep on air it may well be that towards the end of the year in particular, contacts could be made into what will be a new country for most 6 metre operators.

### 52 MHz FM SURVEY

Well, some people at least, read the VHF notes. Two letters have arrived taking to task George VK3ASV for apparent errors in relation to VK2 FM activity. The first is from Bill VK2HZ who mentions he has worked 239 different VK2 stations on 52 MHz during the past eight years, 95 per cent of them would have been on the primary frequencies of 52.525 FM and 53.866 AM, the remainder on AM or SSB. To clarify the position a quote from Bill's letter: "George, VK3ASV, has his lines crossed when he lists VK2 52 MHz net frequencies in "52 MHz FM Survey" [AR March 75, p.17].

The primary frequencies are 52.525 FM and 53.866 AM and have been for the last ten years at least (longer for AM frequency). The VK2AWI broadcasts appear on these two frequencies, also on 52.100 SSB.

Some 10 or seven years ago 52.566 was generally adopted as a secondary FM frequency. The use of an additional frequency was necessary due to the activity on 52.525 and to provide a spot where stations could enjoy a quiet year, without too much competition.

"On the AM side 53.866 was used extensively before Low Band FM Car-phones became readily available, when many stations moved to 52.525. The Illawarra (Wollongong) WIA Branch used 53.862 especially for fox-hunts and the like. In recent years the use of AM nets has fallen with FM operation taking over.

"It would be fair to say that 52.525 FM operation is on the wane, except of course during the DX season when the 'wood-work' opens up!

"The reason for this reduction in activity could possibly be blamed on the ready availability of 144/146cm boxes with the added interest of repeaters and multi-channels. Just another phase in the ever-changing pattern of

### VHF activity".

Thank you Bill for setting the facts straight, and George will now be able to bring his book up to date too.

While on the subject of net frequencies, repeaters etc. it is to be a fact that if one should travel from VK5 through VK3, VK2 to VK4, and north to Townsville, one will need about 7 different repeater channels to be able to have reasonable coverage of the country? And is it also true that in addition to the main four repeater channels, 1 to 4, on 2 metres FM, VK2 look like using Channels 5, 6 and 7? I guess it would be reasonable to say most operators would consider fitting at least the four primary channels 1 to 4, plus Ch. 42 (B) and Ch. 40, the national simplex frequency, but to be asked to add three more repeater channels seems beyond all reason.

If thoughts are proceeding along these lines, might I suggest some thought be given to interstate operators as well. Nice to have your own special repeater on say Ch. 6, as long as it's also OK to only talk amongst yourselves in the main! So there! Now someone tear me apart and tell me how wrong my grapevine is, because I will be glad to be told I am wrong — I will be through the eastern States before too long and I am certainly not going to stick up on Ch. 5, 6 and 7. All I still further to the FM business, Jeff VK2BYW writes to confirm what Bill VK2HZ has already noted above, but adds there is little or no WICEN activity in Sydney now or for some years. However, moves are under way to revive WICEN in VK2. Thanks Jeff for writing too!

The Bundaberg Amateur Radio Club advises that as from 2/4/75 channel 50 will be the Club's 2 metre calling and net frequency, so you guys travelling north through Queensland might bear this in mind. Note from Club Secretary D. W. Albrecht, via Editor "AR".

### NOONBOUNCE

Not much to hand this time, but the 432 MHz equipment of the Illawarra Branch which was damaged by lightning last October has been largely repaired. It is noted the FMT4575 are now priced at \$44 each, duty free, after a price drop! However, such transistors provide a NF of 1.5 dB which is pretty good for 432 MHz. A new PA stage for the transmitter is being constructed to allow for the production of 700 watts of RF output from 1000 watts input, which represents a 3 dB increase in transmit power.

The high ERP signals from WA6LET on 22/2/75 were also received by VK2AMW, the Groups EME station, from 0800Z to 0845Z up to 8 dB above the noise, but repeated calls from VK2AMW were not acknowledged.

Incidentally, the Illawarra Branch of the WIA have adopted a name for their magazine, "The Propagator". So now you will know what I am referring to in the future!

### SPECIAL HF BEACON

Although HF nets may be rather foreign to these columns, nevertheless, this information may still be of some use to VHF operators. The NZART Upper Hutt Branch are now operating a beacon on 28.170 MHz, and it is part of the RSGB World Wide HF beacon network. Details: Date: "Break In" March 1975; Call sign: ZL2HFF; Freqs. 28.170 MHz; Modulation: F1, call sign about every 10 seconds; Antenna: Vertical half-wave omnidirectional; Location: Mount Gilmore, Upper Hutt, near Wellington, 860 m ASL. Power input 90 watts, continuous operation.

Because the factors governing communications on 28 MHz are linked to a certain degree with those pertaining to 52 MHz, this 28 MHz beacon could be useful with its continuous operation. The fact that it can be heard at all in VK indicates a rise in the MUF, and good strong signals could herald a band opening around 52 MHz and above. With so many transceivers around these days, it could well be that some good could come from monitoring the frequency on which the beacon operates during those odd moments when you are in the shack doing something else but nattering on the air. And it might be a good idea to tune down to this beacon during the time of any 52 MHz openings and see how strong it may be; from this you could probably work out a pattern related to signal strength which will indicate just how high the MUF might be. Think about it! As you have probably observed from the lack of specific information little has happened on the

6 and 2 metre scene this month — as seen from this area anyway. However, this could mean some of the usual seasonal improvements in equipment while those habitually on the FM nets are constructing tuneable equipment — I wonder!

Thought for the month: "A man must keep a little back stop where he can be himself without reserve. In solitude alone he can know the true freedom."

The Voice in the Hills

## Contests

with Jim Payne, VK3AZT  
Federal Contest Manager,  
Box 67, East Melbourne, VIC, 3002

### ROSS HULL VHF-UHF CONTEST

Although a few days of grace were allowed for late entries some did not arrive until late and consequently could not be included in the results published in the April issue of AR.

Section (A) —	VK2BHO	2555	868
Section (B) —	VK3BMD	1446	666
	VK3UJ	1255	533
	VK3JYE		694

The PO Box 67 is normally cleared once each week and twice weekly when competition logs are coming in. It is not possible for me to allow more than a few days of grace unless the subsequent publication of results is to be delayed for a month. Sorry folks.

### REMEMBRANCE DAY CONTEST

When you read this the popular Friendly Contest will be only four months away. So mark the calendar for August 15/16 and see up some pencils. Maybe we will have some variations to both the rules and the scoring table as recommendations have been made to the Federal Council and some decisions should be made at the forthcoming convention to be held in Melbourne during the weekend of 15/26/27. Unfortunately there has been very little response to my suggestion in the Feb issue of AR to reduce the amount of detail required in logs.

However, one VK5 has a gem of an XYL who wrote "Having written out very lengthy log sheets from this call sign for 21 years, I can see no great advantage in changing the format of the RD log sheets, as suggested. Surely it could be no easier for anyone (non-technical or otherwise) than to copy page for page from the official station log". Well, not many of us may be so fortunate and I pondered the matter again last weekend while discussing a pile of 1000 SSB logs, a pile of 1000 SSB almost 63 centimetres high, in the incinerator. There is so much detail on those sheets that the FCM does not require. Perhaps with a few short cuts we can get at least 1000 entries this time.

### CONTEST CHAMPION TROPHY

This matter is being considered by the Executive but it is most unlikely that any announcement could be made until after the Convention.

### CONTEST CALENDAR

May 10	World Telecomm Phone
11	Worked all Britain LF phone
11/11	USSR M-CQ DX
17	World Telecomm CW
17/19	Michigan QSO party (CW & Phone)
June 1	Worked all Britain LF CW
21	All Asian DX Phone
28/29	ARRL Field Day
<b>WORLD TELECOMM CONTEST</b>	
Phone	0000-2400 GMT May 10
CW	0000-2400 GMT May 17
Limited to single operator stations 10 through 160 metres. Use a separate log for phone and CW. Exchange RST plus your ITU zone.	
Scoring	10/15/20      40      80/160

First score: Total QSO points multiplied by different ITU zones worked. The same station may be worked on each band for QSO points but Zone is counted once only. Mail logs before June 30th to Ministerio das Comunicacoes, DENTAL, 70,000, Brasilia, DF, Brazil.

WORKED ALL BRITAIN  
These contests are 12 hour affairs from 0900 to

# **FERGUSON**

*Manufacturers of:  
Electrical / electronic  
equipment, wound  
components and  
lighting control  
equipment.*

**BRANCHES  
IN  
ALL STATES**

**Ferguson Transformers  
Pty Ltd.**

Head Office  
331 High Street, Chatswood  
NSW 2067

PO Box 301 Chatswood,  
NSW Australia 2067

Phone: 02-407-0261

## **BRIGHT STAR CRYSTALS**

- **PROMPT DELIVERY GUARANTEED**
- **ALL TYPES OF MOUNTINGS**

Such as HC6/U (style D) . . . HC18/U (style J) . . . HC25/U (style K) . . .  
etc. . . . Frequency range up to 140MHz on 5th overtone.



- **ACCURACY**
- **STABILITY**
- **ACTIVITY**
- **OUTPUT**

## **BRIGHT STAR CRYSTALS PTY. LTD.**

35 EILEEN ROAD, CLAYTON, VIC., 3168. Phone: 546-5076 (Area Code 03).

INTERSTATE CLIENTS: Contact your Local Agent

Our increased production now enables us to offer Special Discounts from 10%  
Let us quote you for all your Crystal requirements.  
Our easy-to-read Price List is now available.

Sydney: PARIS RADIO ELECTRONICS, 7a Burton Street, Darlinghurst, N.S.W.  
2010. Phone: 31-3273.

Perth: W. J. MONCRIEFF PTY. LTD., 176 Wiltentoon Street, East Perth,  
6000. Phone: 25-5722.

Brisbane: FRED HOE & SONS PTY. LTD., 246 Evans Road, Salisbury North,  
4107. Phone: 47-4311

Adelaide: RQERS ELECTRONICS, P.O. Box 3, Modbury North, S. A.  
5092. Phone: 264-3296.

Second Generation Instruments from

# **HALTRONICS**



**101B DIGITAL MULTIMETER**

- 0.1% accuracy
- automatic polarity
- 3 1/2 digit L.E.D. readout
- 16 ranges - D.C. volts, A.C. volts  
- D.C. current & resistance



**201B AUTOMATIC FREQUENCY COUNTER**

- 10Hz - 30MHz guaranteed min.
- auto ranging
- overflow control gives 1Hz resolution
- accuracy 1 part in 10<sup>4</sup>

Distributed by

\$179.00 plus 15% tax

## **SOUTHPARK PTY LTD**

P.O. Box 166 Cremorne, NSW 2090  
Ph 241 1263, Telegrams and Cables "Southmark Sydney"

2100 GMT on dates listed in calendar. The LF bands are 160, 80 & 40. Exchange RS(T) and QSO number. UK stations will also give their county and WAB area number. Scoring: Each contact 5 points. The same station may be worked on different bands for QSO points but not multiplier. This is determined by number of different UK areas worked. Logs go to R. L. Senter, G4BYF, 10 Toll Bar Av, Botolph Claydon, Norfolk, NG13, England.

#### 16th ALL ASIAN DX CONTEST

Phone 1000 GMT June 21 to 1600 GMT June 22 CW 1000 GMT Aug 23 to 1600 GMT Aug 24  
A brochure has been received setting out full details of these contests. The rules are detailed and a summary sheet is prescribed. You can also be named in the results for a defective log or a false statement in the report so please send a SASE to the FCM for complete details of this competition.

#### 16th ALL ASIAN DX PHONE RESULTS

VK5XNO	M	581	71	41,251
VK7DK	M	589	56	32,984
VK4VU	M	237	23	5,451
VK3SM	M	93	37	3,441
*VK2XT	21	436	27	11,772
*VK3WT	14	50	6	209
VK6DG	14	24	12	288

\*Section winners.

## Letters to the Editor

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

Dear Sir,

One of the highlights of my amateur year is the RD Contest.

I have enjoyed it for many years and hope to continue enjoying it for many more.

The comments, criticisms and suggestions that follow are made with a view to stimulating discussion about, and interest in, the RD Contest and are not meant to be "shots" at anybody or any organisation.

To begin with, let us look at my definition of a contest—

A contest is designed to test operating skills, reliability of equipment and endurance of the operator.

I believe the first mentioned is most important and a good score (top ten) requires a good operator. The friendly contest concept is OK providing it doesn't detract from the operating skill aspect. I can see no need to swap names in the contest unless it can add to my score.

Please remember that speed and accuracy are vital in a contest. The same skills are vital in emergency communication.

You will always back a good contest operator when the chips are down and the message must go through in spite of bad conditions.

Participation in the RD Contest should be encouraged for the above reason, if for nothing else.

Equipment reliability is a must, and whether you buy it or build it, you will find you pretty hard after 20-24 hours continuous operation.

Durability of the amateur? All I know is that each year it's a little harder to last the distance and it takes a little longer to recover, nevertheless I wouldn't miss the RD Contest for such minor discomforts.

#### PARTICIPATION:

Always there are recriminations about poor participation. I have already written on the subject of the handicap of counting non-starters in the score.

In VK3 we have the largest number of limited licensees, but very very few participate. Some of the ideas given later may encourage more VHF participation but for starters, what about a nominated VHF period during which VHF points score double? I would suggest midnight to 2 am for a trial.

While we are encouraging VHF operators to participate, let's also encourage HF operators to use all bands. Let's have a bonus or multiplier for operation on 160 Mx, 15, 10, 6 and 2 Mx. Say ten

# 1975 JOHN MOYLE MEMORIAL NATIONAL FIELD DAY RESULTS

## 24 HOUR DIVISION

Section (a) Tx Phone	VK4AL	2022
	3BBB	1880
	1JR	1859
	4FD	1520
	3BCH	302

Section (b) Tx CW	VK3TX	487
	5DL	150

Section (c) Tx Open	VK2CAX	2183
	3AUQ	1264

Section (d) Tx Multiple Phone	VK5AWI	4079	4 ops
	8AS	3592	6 ops
	5LW	2943	6 ops
	3ANR	2296	5 ops
	3RV	715	3 ops

Section (e) Tx Multiple Open	P29PNG	6599	6 ops
	VK3ATM	6139	16 ops
	3APC	5726	16 ops
	3AWS	4944	11 ops
	1ACA	4752	8 ops
	2W6	3736	12 ops
	1WI	3652	7 ops
	3XK	2892	4 ops

Section (f) Tx VHF	VK3AVJ	1085
	2YCK	1031
	3AVE	554
	22CT	338
	42AF	228
	2YDV	192
	42GR	138

Section (g) Home Stations	VK5LM	545
	3BCH	430
	3KK	410
	3YIG	270

Section (h) Receiving

L3-0042 370

## 6 HOUR DIVISION

Section (a) Tx Phone	VK3YQ	745
	3EF	473
	7BM	435
	3ADW	414
	7AX	110

Section (b) Tx CW	VK2YB	254
	2JM	182

Section (c) Tx Open	VK4AAR	624
	3HE	410

Section (d) Tx Multiple Phone	VK5SR	1063	7 ops
	5KR	1007	8 ops
	4WIM	870	2 ops
	4AAX	669	2 ops

Section (f) Tx VHF	VK2ZHT	800
	22CX	214
	4ZLT	80

Section (g) Home Stations	VK7AL	525
	4LP	520
	3XB	360
	3RH	265
	2VM	70
	3ALD	45
	5LP	45

Section (h) Receiving	R. J. Everett, Tas.	410
-----------------------	---------------------	-----

Check logs: VK7RY, 4HS

NOTE—Checking of logs not completed. Consequently scores and placings are subject to confirmation.

QSOs needed on each band to earn the bonus/multiplier for that band.

No bonus for 80, 40 or 20 Mx but for the amateur with limited facilities give an award for single band operation only.

#### SCORES:

This is always a point of discussion. How can it be made to balance between States of such widely varying amateur population.

I would suggest the following points be considered as a basis for determining the winning State:

- Score entries only — not non-starters.
- Total scores of top ten logs.
- A multiplier for number of bands used.
- Give a score for % increase in participation over, say the last three contests.
- Give extra score for number of entries with 100 or more points.

Balancing all that won't be easy but I'm sure one of our fraternity has access to a computer which could handle the problem.

To summarise, here are my suggestions for the contest:

- Bonus or multiplier for 10 or more contacts on each of 160 Mx, 15, 10, 6, 2 Mx.
- Double points for VHF intra-state from midnight to 2 am.
- Certificate for highest log entered as single band only.
- Allow points for different modes with same station on same band.
- Consider use of repeaters (I don't know if this would be good or bad).
- Re-vamp Winning State formula.
- What about a bonus for new modes such as SSTV?

No doubt there are more (and better) ideas floating around, so let's see what everyone thinks via the pages of this Magazine.

73's

Mike VK3WW

The Editor,

Dear Sir,

My wife, Betty, and I arrived in Australia, from England, at the end of November 1974 to visit

our son and his family in Sydney. Prior to our departure from England I had contacted many of my Australian radio amateur friends and received many invitations to visit them.

We are due to leave Australia on the 15th April '75 for home, via Singapore, and we wish to express our sincere appreciation and thanks to the many amateurs who afforded us all the friendship and hospitality that we enjoyed.

I was privileged to be invited to the recent "Old Timers" meeting in Melbourne, and met many of the "Youngsters" who started off with smoke signals!

We were invited to the homes of VK4KS, VK3AAO, VK3BM and VK3GN where we stayed and were treated like VIPs. We met so many "VK" amateurs and received the same wonderful hospitality that it seems unfair to mention any one in particular!

I was impressed by the enthusiasm and knowledge of the Australian amateurs and the quality of performance of the home-brew equipment.

My wife and I agree that you have a wonderful country and such great people — we thank you all for the wonderful time spent in Australia.

73. Yours sincerely,

Leslie and Betty Luscombe  
GBNY, VK2BMY, FONY

The Editor,

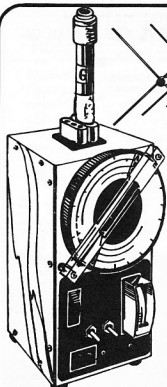
Dear Sir,

TOWNSVILLE PACIFIC FESTIVAL CONTEST 1975  
The aim of the contest is to foster an interest in the Townsville Pacific Festival, and to increase interest and activity on all amateur Bands by Australian and New Zealand Amateurs.

It will be noted that a further effort is made in this contest to increase popularity of the CW Mode of communication. Hence all CW contacts count for double score.

This is the second year that the Townsville Pacific Festival contest has been run. Last year 1974 VK4IZ scored the highest points and received the trophy.

This year we wish to include the ZL and P29 to get a more interest in the contest. If either win the contest the trophy will remain in



**Genuine 200 MHz G.D.O. you won't find a Better One!**

**DELICIA BW 200 GRID DIP METER**

FET transistors GDM to beat all GDM's. This one works reliably on VHF to 200MHz. It is a really professional unit for those who seek the best. Covers 400kHz to 200MHz in 7 bands. Battery operated.

**\$142.00**



**SSM Europa B10M - 2M SSB TRANSVERTER - 200 WATTS**  
The Europa B is a linear transmit and receive transverter 2B-30MHz to 144-146MHz. It is suitable for use with either a transceiver or a separate receiver/transmitter. It is ideal for Oscar operation as well as normal tropo work. Although its primary use is for SSB, it will receive and transmit any mode of which the H.F. equipment is capable: SSB, AM, CW, FSK, FM. Once attached to your H.F. equipment, you operate it exactly the same as on the H.F. bands, the Europa B does the rest.

The receive converter is broadbanded to cover the whole band without any tuning of the Europa B. It uses protected dual gate MOSFETs to give you optimum sensitivity, gain and minimum trouble from strong signals. In fact the H.F. receiver will normally overload before the Europa B does.

**NEW CATALOGUE OUT**

Please Rush me your latest Catalogue I enclose 50cents for P.P.

NAME \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

#### NEW 2 METRE ANTENNAS

9Y2D2KW, 144-146 MHz 9 element Yagi specially designed for Oscar use **£290** (p & P Road Freight extra). 3Y-21L, 3 element Yagi 144-148 MHz gives 6dB gain - ideal for fox hunts Only **£14.00** (p & P \$2.00)

#### HAM NOTEBOOK

A continual best seller, HAM NOTEBOOK is just a few short months has well established itself as an important part of any amateur's library.

This book is taken from the best of HAM RADIO's popular ham notebook section and has a wide variety of short ideas and projects on virtually every phase of amateur radio. **\$4.95**

**Now only \$3.50**

#### NEW ARRL HANDBOOK IN

Latest edition has more Tx and Rx circuit stuff than before plus half-size 20M Yagi and S element cubical quad. New updated chapters on many subjects. **\$7.50** (P & P \$1.00).



### OSLER BLOC SWR200 Professional THROUGH-LINE SWR & POWER to 2kW

#### Specifications:

##### SWR Meter

Type: Directional Coupler  
Ratios: 1 : 1 to 1 : 10 & ∞  
Frequency Range: 3 MHz to 200 MHz  
Impedance: 75 ohms & 52 ohms  
Full Scale

Minimum Power: 50W at 3.5 MHz  
15W at 7 MHz

##### Power Meter

##### Type:

##### Power Ranges:

Through Line  
0-200W, 0-2kW at 3.5 MHz  
0-20W, 0-200W, 0-2kW at 7/14/21 MHz  
0-2W, 0-20W, 0-200W, 0-2kW at 28 MHz  
0-2W, 0-20W, 0-200W at 50/144 MHz  
±15% at SWR 1:1  
2 kW at SWR 1:1-1

##### Accuracy:

##### Safety Rating:

750W at SWR 1.5-1  
200W at SWR 3.0-1  
95 uA D.C.  
UHF Type (ISO-239)

##### Meters:

##### Connectors:

This is the first instrument of its kind under \$100, at only **\$48.50** P & P \$2.00

50W at 21/28 MHz  
0.5W at 50/144 MHz

Dimensions:  
3" high x 4-3/8" deep x 8-5/8" wide

### JUST IN Ideal Mobile Mike

#### NOISE CANCELLING MICROPHONE CDM1541

This new microphone features twin inserts which are out of phase to ensure good noise cancelling. Fitted with high quality PTB switch and retractable cord. Frequency response from 300-5kHz, 250-500 ohms. Why buy to \$30? The CDM1541 is only **\$8.90** (p & P 75c)

#### TIE-CLIP ELECTRET MICROPHONE \$12.50

Don't spend twice our price! This is a real electret job with FET preamp matching 600ohms. Response from 50 to 16,000Hz. Measures 0.55" dia x 1.26" long. Battery will last around 1000h. Supplied with 10ft of shielded lead.

ideal for Amateur use!



Main Mic Insert

Noise Cancelling Insert

### Oscar Fans!

The transmit converter employs valves to provide, high power, good linearity and extraordinarily high rejection of spurious signals. This gives you a clean, sharp signal. The transmitter tuning is brought out to the front panel and requires returning as you move around the band, in the same way as H.F. equipment requires tuning up. The oscillator chain is a stable solid state circuit to ensure same frequency transceive operation, or correct netting with separate. The crystal used has a very high stability specification with only 5ppm tolerance. The Europa B plugs directly into the accessory socket of the FT101, FT221, FT200, FT250. Many people are using the Europa B with Heathkit, KW, Trio etc., equipment, we have the information on how to couple them to the Europa B. **TOTAL PRICE**

**\$229**

(Road Freight \$3.00 extra).

### 'DICK' Power Supply

Input: 240V AC  
50Hz Output: 12V DC 3A surge 5A

**\$32.00** p.p.\$1



Crystals included as follows:

	Tx	Rx
Channel 40	146.00	146.00
Channel 50	146.5	146.5
Channel 42/54	146.1	146.7
Channel 48/50	146.4	147.00

Special KCP-2 NiCad battery set and charger with 10 cells to suit the KP202 available at \$35.00.

Special **\$131.00** additional Crystals at \$8.00 per channel! (P & P \$2)

## DICK SMITH ELECTRONICS CENTRE

Head Office Mail Orders

Also at 125 York Street City Tel 291126

160-162 Pacific Hwy Gore Hill N.S.W. 2065 Tel 439 5311

361 Home Hwy Bankstown Tel 709 6600



## DX QSL Notes

The following list of DX stations and QSL information has been supplied by Ken VK3AH.

3C1AGD — SM3KXS  
 FB8YC — FB8YD — F8MD or F8KAW  
 8Q6AC — 8Q6AB — c/- Tokyo Village, Marleigh  
 Rep. of Maldives Islands  
 SW0WV — U.S. Embassy KAV A.P.O. New York, NY 09259  
 7P8AQ — P.O. Box 1266 Maseru, Lesotho  
 7P8AT — P.O. Box 1098 Maseru, Lesotho  
 ZS6BHW/3DS — K. Muller, P.O. 283 Mbabane, Swaziland  
 5U7HL — Rev. T. Schultz, BP 8062, Tokoin Lome, Togo  
 VU2ABC — WA1FEO  
 VP2KO — Box 364, St. Kitts, Windward Isles  
 VP2AB — J. Brown, Box 229, St. Johns, Antigua  
 W. Isles  
 KV4BW — Box 3680 St. Thomas, American Virgin Isles  
 V58AQ — Dr. Lo, Saikung, Hongkong  
 OH7RF — Ukkola 81290, Finland  
 KG4GG — Box 12, Unavasta, FPO N. York, NY 09593  
 KP4EAX/H18 — K. Gonzalez Rodriguez, Calle 27 No. 22, Ensanche Naco, Santo Domingo, Dr.  
 KX6LN — Box 1199 APO San Francisco, CA96555  
 KX6LP — Box 1064 APO San Francisco, CA96555  
 VZ8BM/8 Norfolk — VE3GUS (Direct only)  
 FL8BH — H. Bouchet, P.O. Box 10 Ali Sabieh, French Somaliland  
 VP2EB — W4REI, WB4ZNH  
 P8JDX — WB4IDX  
 SP9PT/VE — SP9RU  
 ZMTAH and ZMTAJ — W5ZF  
 HDIQR — WA8TDY, John Croll, 3528 Craig Drive, Lint, Michigan 48506 (S.A.S.E. & 3 IRCs)  
 CR7IC — AA Pedro Dos Santos, P.O. Box 139 Porto Amelia, Mozambique  
 WA6TJV/K56 — M. Hitchcock, Box 1619 Pago Pago, U.S. Samoa  
 XE2RLP — Box 1147 Mazatlan, Sin, Mexico  
 3A2CP — Leslie Newport Gwilt, Le Bermuda Monaco, M.C. or WA3HUP  
 7Q7BC — Peter Conway, Box 595, Limbe, Malawi Central Africa (VQ2BG & J92BC)  
 CP1DN — Malcolm Chris Jensen, Usaid Bolivia APO NY 09867 Casilla 673 La Paz Bolivia  
 A35AF — Bert Beszelzen, P.O. Republic of Nauru PY2CPK — Osvaldo Reis de Magalhães, Rua Marques de Paranaguá, 164, 01363 — São Paulo, Brazil, Sin, America  
 TG8AU — F. Humberto, Cordon — Apartado Postal 248 Guatemala, C.A.  
 A4FQ — P.O. Box 1000 Muscat, Sultanate of Oman  
 VP2DH — WBHM  
 8R1AG — WA7T0Z

Australia and be presented to the Highest Scorer in Australia.

I trust that all will enjoy the contest and make it as interesting as last year.

73s Good Luck, Hugh C. Barlow VK4AM  
 Queensland Contest Manager

### 1. Time of Contest:

The Contest will be of 12 hours duration — 0200 GMT to 1400 GMT Saturday 15th June, 1975.

### 2. Sections:

- (a) Transmitting all bands phone only
- (b) Transmitting all bands CW only
- (c) Transmitting all bands Open
- (d) Receiving all bands. Open.

### 3. Contacts:

- (a) CW contacts count as double score (CW to CW).
- (b) One (1) contact per band per mode only.
- (c) No cross band contacts.

### 4. Awards:

(a) A certificate will be awarded to the highest scorer in each section for each call area. Per band.

(b) The entrant with the highest score will be awarded a certificate.

(c) Trophy awarded to entrant with highest overall score within Australia. Trophy to be held over until next contest.

### 5. Scoring:

Bonus — (a) For contact with VK4WIT — 15 points to be added to score on table below.

N.B.—VK4WIT and other Townsville stations are the y VK4 stations that other VK4 stations can contact. Scoring for VK4WIT and other Townsville stations will be the same as for other VK4 stations.

However VK4WIT and Townsville stations receive no bonus points.

### Scoring for VHF & UHF:

Same as for HF except that on bands above 50 MHz — (i.e. interstate contacts are permitted) — for this purpose, a contact on frequencies above 50 MHz within an entrant's own call area will score 1 contact point.

With the exception of VK4 where the Bonus rule applies for contact with VK4WIT or other Townsville stations.

### Contacts on 160 metres:

Same scoring as in table with additional 5 bonus points per contact.

### Contact points as per table below:

	P29	VK1	VK2	VK3	VK4	VK5	VK6	VK7	VK8	VK9	VK10	ZL
VK0	6	6	6	6	6	6	6	6	6	6	6	— 3
VK1	—	1	1	2	3	6	2	4	5	6	3	
VK2	1	—	1	2	1	6	3	4	5	6	3	
VK3	1	2	—	3	2	4	1	6	5	6	3	
VK4	2	3	1	—	4	6	5	2	1	6	3	
VK5	3	2	2	4	—	1	5	1	6	6	3	
VK6	6	6	4	6	1	—	4	1	2	6	3	
VK7	2	3	1	5	5	4	—	6	5	6	3	
VK8	4	4	6	2	6	1	6	—	2	6	3	
VK9	5	5	5	1	1	2	5	2	—	6	3	
ZL	3	3	3	3	3	3	3	3	3	3	3	—

6. Send logs to:  
 Townsville Pacific Festival Contest,  
 P.O. Box 964,  
 Townsville, Q. 4810

### 7. Closing Date of Entries:

15th July, 1975.

P.S.—Townsville Stations identify by:

(Phone)—VK4WIT Townsville

(CW)—VK4WIT/TVL

The Editor,

Dear Sir,

I think it is correct that technical errors in articles should be pointed out. I would therefore like to point out an apparent error in the diagram on Page 11 of March Amateur Radio, 1975.

The author of the article describes how to draw an ellipse which represents the earth's orbit around the sun. The orbit shown contains a major error.

The earth's orbit is not as elliptical as that shown in the diagram. This is quite excusable since an exaggerated diagram can often be used to illustrate a point. In the diagram the major and minor axes are shown as being in line with the summer and winter solstices and the equinox. This is not correct but the difference is only 12 days and this is also a minor point.

The diagram shows the sun as being at the centre of the orbit and herein is the error. The sun is actually at one of the focal points of the ellipse. In the case of this ellipse the focal points are the points where the pins were used to do the drawing. The sun or focal point of the orbit always lies on the major axis and has its closest point along the major axis. The diagram shows the closest points lying along the minor axes.

The following are a few facts about the earth's orbit. The ratio of the distance from the centre of an orbit to the sun compared with half the major axis is known as the eccentricity of the orbit. In the case of the earth, the eccentricity is about 1 in 60 (an almost circular orbit). The earth is closest to the sun on the 2nd of January and furthest from the sun on the 6th of July. The difference between the closest distance to the furthest distance is about 3 million miles.

J. A. Adcock.

Member of the Astronomical Society of Victoria.

## SWLs

Would you like an SWL

column in AR?

What should this column

cover?

What do you want to see in

AR?

CAN ANYONE HELP OUT?

## QSP

### FREQUENCIES

"So long as we depend on the publicly-owned frequencies for amateur radio's very existence, we had better make sure the public knows who we are and what we do". Quote of the month in QST, Oct. '74.

### STATISTICS

Radio Communications for Nov. '74 advises that RSGB membership at the end of Sept. totalled 17,250 which included 1,720 overseas members and 1,020 associates in the U.K. At the end of Aug. '74 there were 25,333 amateur licences in force in the U.K.

For Reliable Connections



# RESIN CORE SOLDERS

O. T. LEMPRIERE & CO. LIMITED

Head Office: 31-41 Bowden St., Alexandria, N.S.W., 2015  
 and at Melbourne, Brisbane, Adelaide, Perth, Newcastle



KENWOOD



# QR-666

the ALL-band

## COMMUNICATIONS RECEIVER

that gives  
you the world  
and an FM  
option, too.

All-band/all-mode reception on frequencies 170 kHz to 30 MHz covered by 6 bands. Receives broadcasts in any mode AM, SSB, CW or FM—with the optional accessory QRB-FM. Super sensitivity from dual gate MOS types FET's, double signal selectivity and AGC characteristics. IF circuit with mechanical and ceramic filters designed for high selectivity, resistance to interference, single button selection of wide band (5 kHz/6dB) or narrow band 2.5 kHz/6dB. Altogether a high performance compact, smartly styled unit of advanced design at a suggested 'Today' price of \$296.50.



—Mail coupon NOW!—  
Weston Electronics Company  
215 North Rocks Rd., North Rocks, N.S.W. 2151 Phone 630-7400

NAME .....  
ADDRESS .....  
POSTCODE .....

Please send details of  
the Kenwood QR-666

FOR YOUR—

# YAESU MUSEN

AMATEUR RADIO EQUIPMENT

in

PAPUA-NEW GUINEA

Contact the Sole Territory Agents—

**SIDE BAND SERVICE PTY. LTD.**

P.O. Box 795, Port Moresby

Phones 53557, 55511



## STOP PRESS — NOVICE LICENCE APPROVED

The P.M.G. announced in a press release dated 16th April 1975 that arrangements have been made for the introduction of Novice amateur radio station licences.

Senator Bishop stated that the Novice licence is being introduced to enable persons who have not passed the standard amateur examination to engage in radio as a hobby on a restricted basis and gain the knowledge and experience necessary to qualify for a normal licence. This move by the Government had the wholehearted support of the Wireless Institute of Australia.

To become eligible for such a licence, persons will be required to qualify for a Novice Amateur Operator's Certificate of Proficiency.

The Certificate will be issued to any person, regardless of age, who passes a comparatively

simple examination in radio theory and regulations and a Morse code test at 5 words a minute.

He said that the fee for a Novice amateur station licence had been set at half the normal rate and would be \$6 a year. The fee for the examination will be \$2.

Novice amateur station licensees will be permitted to operate within the bands 3.525-3.575 megahertz (MHz) 21.125-21.500 MHz and 26.960-27.250 MHz. All transmitters must be crystal controlled. Powers of up to 10 watts for double sideband and 30 watts for single sideband transmission will be authorised.

Persons wishing to obtain more information concerning the new Novice licence should contact the Regulatory and Licensing Section of the Postmaster-General's Department in the State in which they reside.

## RAE ANTENNA

BY VICON

	Model	Imp	Freq	VSWR	PRICE \$
BALUNS	BL-50A	52	1.8-38MHz	1.3:1	14.90
	BL-70A	75	1.8-38MHz	1.3:1	14.90
COAX SWITCHES (2 & 6 pos)	CS-2A	52	to 300MHz	1.3:1	21.00
	CX-6A(I)	52	to 500MHz	1.3:1	54.00
TRAP DIPOLES	CX-6A(II)	75	to 500 MHz	1.3:1	54.00
	III-N	52	7 to 28MHz	1.2:1	31.00
LISTENER	AL48DXN	53	3.5 & 7MHz	1.2:1	31.00
	AL24DXN	52	7 & 14MHz	1.2:1	24.00
	A-4VPN	52	3.5MHz	1.2:1	24.00
	A-8VPN	52	7MHz	1.2:1	26.50
	L1	75	3 to 30MHz	—	14.90
BALANCED FEEDER	BTF-1	600	—	—	12.00

## ANTENNAE

MARK MOBILE (HELICAL):

HW-80 80M 6ft \$18.  
HW-40 40M 6ft \$18.  
HW-20 20M 6ft \$16.  
Bumper mount \$14, Heavy spring \$11  
HY-GAIN

TH3JR 10-15-20 3 el yagi \$118

203BA 3el 20m beam \$168

VHF ANTENNAE

Scalar Mobile Whips:

M22 2m fibreglass 1/4w \$7.50

M60 6m fibreglass 1/4w \$10.70

M21 2m steel 1/4w \$6.90

LINGOEN 2m 5/8 whip \$21, base \$2.60

RINGO ARX-2 6db 2m vertical \$35

Extension kit to improve

gain of the old AR-2, \$12

## ANT. ACCESSORIES

ME-1B SWR PWR METER 3-150 MHz \$22

ME-UA UHF POWER METER \$69

AS-GM gutter dashes 2m \$7.50

SH-7E lightning arrester \$14.90

CO-AX 58u 45c per m

RB 2m mast arm (144-146 or 146-148) \$32

6m and 2m low noise preamps \$18.75

VICON 70cm low noise preamp \$22.50

Rotator — CDR ham II 240v \$165

## CRYSTAL OVENS

pcb mount proportional control crystal ovens can be supplied for standard temperatures and voltages.

He-25/u crystal \$19.80

He-6/u crystals \$19.80

## SPECIAL

KEN KP-202 hand-held 2M FM 2 watts incl 4 chs (40/50/1/4) \$130.

— Nicad chargers and nicads \$32

— stubby helical whip \$8.90

We do not sell "C.B." equipment.



VICON INTERNATIONAL PTY LIMITED (03) 82-5398  
139 AUBURN RD, AUBURN, VIC 3123 Manager: Peter Williams

AGENTS:  
SHEPHERD Phil Finkbeiner Ph (02) 436033  
A.C.T. Andrew Davis, 32 Kalganville Cres, Fisher, 2611 Ph (082) 864999  
G.D. G.D. Davis, 21 Chelmer Ave, Mount, 4230 Ph (070) 351788  
W.A. Andy Clarke, 264 High St, Stirling, 6155 Ph (082) 574000

## ASIA

JETPCY	11451	JAECDZ	112
JETMLK	1104	JAEGET	56
JAT1AAT	847	JAT7NK	351
JAOBMS/1	767	JAT7CUK	248
JH3DPB/1	656	JAT7KXD	168
JAT1WVK	416	JAT8BM	1648
JAT1XZE	170	JAT8QO	1216
JH1XSA	161	JAT8FD	924
JAT1LB	130	JAS8WY	781
JH1BLX	80	JAS8UB	468
JH1LKH	4	JAS8VR	24
JAT1RJJ	2	JAT8FB	897
JH1RJJ	1	JAS8YAY	468
JAT2HGA	6576	JAD8UR	360
JH21YR	1056	JAC8CZ	3024
JH21NWF	558	JAQ8XQ	1140
JAT2JJ	130	JAF8MB	897
JAT2SD	60	JAQ8IE	584
JAT2JAW	10054	JAT8HZ	3024
JASCEK/3	1095	JADPTV	162
JAT3ELU	1088	JAQ8KH	39
JAT3AEV	864	JAQ8UP	8
JAT3BEA	803	OD5BA	351
JH3BJN	132	9M2DQ	6294
JH3CJ	33	K8DQ	82
JAT4AOR/3	21	OD8Q	52
JR3YCUC	3	UK8FAA	40
JR3CQC	check	UL7FM	280
JAT4BUA	6183	UL7JAW	175
JAT4DZ	1698	UL7LH	2601
JAT4EYE	145	U8BQ	52
JAT4UDP	140	U18CZ	532
JH48XG	18	U18JGJ	54
JAE5VQ	8	UA8CBQ	2340
JAG6NW	2064	UW9BZ	512
JH6DVA	1485	UK9QAZ*	1551
JAG6RW	979	UK9QAZ*	1551
JH6LDO	972	UK9CAM*	408
JAE6DY	760	UA0FGM	2818
JAE6RCH	531	UA0MI	2546
JAE6JRI	468	UW01X	414
JAE6CM	270	UCAH	4

NORTH AMERICA			
VE3GCO	1095	W2LSX/2*	1727
VE5RA	189	W4WSF	7454
YS1MAE	630	W5RTQ	3060
YS1JWD	340	K6UIA	20425
W2WJC	589	K8CFJ	624
W2FCR	1440	W6CJS	245
W2GXJ	896	WA2WMT/0	9044
SOUTH AMERICA			
HK3AYA	320	PY1DBE	336
PY2ELV	458	PY1CHP	3

OCEANIA			
VR1AA	29250	KH6J1	16830
YJ8BL	46920	KH6AHZ	31444
WS1AP*	72709	KH6H1*	24768
P29	10440		
EUROPE			
DL8NU	3358	OH3MG	2852
DK3GI	1068	OH2BCV	568
DJ6RX	850	OH2BN	245
DJ0KT	708	OH2NW	240
DK6EJ	24	OH2BFX	48
DM2BJD	3120	OH6RC	check
DM2FBL	150	OA4XG	288
DM4YEL	128	OA4PA	280
DM5EGL	136	SM1AB	3874
DM5EN	8	SM5CPS	2737
DM4JA	check	SMOCC	2760
DK3YBF	check	SM2DMU	1050
G3KOM	1207	SMOCCM	750
GECJ	396	SM5DSF	588
HP3VA	272	SM3BCS	90
HA5KQD	3720	SM5A5Y	210
HA9KOV	144	SM5FEX	40
HA9KOB*	2016	SM0BDS	check
HA1KSA*	680	OK1MPP	975
HA8KBM*	434	OK3KFF	342
HB8KJ	1564	OK1MAW	304
HB8AFI	308	OK1TA	290
LA6HL	24	OK3EE	252
L22RF	832	OK2SL5	156
L21KDP	780	OK2OX	140

## QSP

### USA AMATEUR RE-STRUCTURING

From an article in Jan '75 QST "as anticipated, FCC says we should have two routes of incentive licensing. One would be the present basic HF ladder of Novice to General to Advanced (and Extra). It is termed Series 'A' or the 'short wave' domain, defined as below 29 MHz. The second would be an expanded VHF-UHF progression with a new 'Communicator Class' as the entry point to feed technician ranks, and beyond it, an 'Experimenter Class' — a sort of 'super-tech', paralleling the Advanced level. An amateur would thus have to hold two types of license authorisation to operate both below and above 29 MHz. The Extra Class would remain the top objective".

### SARL

From the editorial in Radio ZS for Jan '75 it is observed that 1975 is the 50th Anniversary of the South African Radio League. ZS6IY in the editorial says "our hobby cannot be conducted in isolation and thus by its very nature it depends for its fulfilment on the co-operation of others — there is no such thing as a one-way QSO".

### TELECOM 75

The Secretary-General of the ITU proposes a World Radio Amateur Convention be held within the framework of Telecom 75 scheduled for Oct. 1975 (4th and 5th) in Geneva as part of the World Telecommunication Forum. Any member likely to be able to join in please write in to the Executive Office in Toorak.

### ARE YOU UNFINANCIAL?

If you are your AR will have ceased and missing issues cannot be sent free of charge when you do pay up. If you are financial your AR will still be mailed out and you should still be getting it so long as the address is correct and there are no errors which might have accidentally crept into the system.

## B.E.S. NEWS

Plenty of rotators, baluns, mobile whips and mounts, VHF beams, co-ax switches, vertical trap antennas, trap dipole kits, SWR meters, FM transceivers, manual and auto keys, digital clocks, and digital clock radios, co-ax cable, low pass filters, 70 ohm twin feeder cable, egg insulators, dummy loads, etc., in stock.

A shipment from KW Decca Electronics U.K. is expected to arrive very soon. This will contain antenna couplers, baluns, dummy loads, low pass filters and multi-band trap dipoles. And, of course, Yaesu equipment for HF and VHF, including the new FT-620B, FT-220, FT-224, etc.

### A USEFUL HINT!

When constructing or repairing equipment and you have a screw or nut to place in an awkward-to-reach position, try holding the screw in the end of a length of spaghetti insulation or stuck to the end of a screwdriver with a small piece of wax, and the nut partially screwed onto a piece of resin cored solder of suitable diameter or with 2 or 3 strands of thin solder twisted together.

## UHF SERVICES

For:

CONVERSION

ALIGNMENT

SERVICE

on all VHF, UHF and  
Microwave Equipment

AGENTS FOR

SCALAR ANTENNAS

Also available:

2 metre and 6 metre RF pre-amplifiers, soon to be followed by a 70 cm low noise pre-amp for AM, ATV and FM use.

PHONE 91 4300

or by appointment at  
129 TENNYSON ST.,  
ELWOOD

## "WILLIS" AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding, use — "WILLIS" AIR-WOUND INDUCTANCES

No.	Di. Inch	Turns per 1' g'g	8 & W. Equiv.	Price
1-08	1/4	8	3 No. 3002	88c
1-16	1/2	16	3 No. 3002	88c
2-08	3/8	8	3 No. 3006	\$1.06
2-16	3/8	16	3 No. 3007	\$1.06
3-08	3/4	8	3 No. 3010	\$1.28
3-16	3/4	16	3 No. 3011	\$1.28
4-08	1	8	3 No. 3014	\$1.42
4-16	1	16	3 No. 3015	\$1.42
5-08	1 1/4	8	4 No. 3018	\$1.58
5-16	1 1/4	16	4 No. 3019	\$1.58
8-10	2	10	4 No. 3907	\$2.29

Special Antenna All-Band Tuner Inductance

(Equivalent to B. & W. No. 1907 7 inch)

Willis Pi-Coupler Unit — \$18.00  
7" length, 2" dia. 10 T.P.I. Price \$3.96

Reference: A.R.R.L. Handbook, 1961

Stockist of Transmission Cables, Insulators and Hard Drawn Copper Antenna Wire  
Write for range of Transmission Cable

WILLIAM WILLIS & CO.  
PTY. LTD.

Manufacturers and Importers

77 CANTERBURY RD. CANTERBURY  
VIC. 3126 Phone 836-0707

## ELECTRONIC SERVICES

60 Shannon St., Box Hill North, Vic., 3129.

Ph. 89-2213

QLD. MITCHELL RADIO CO., 59 Albion Road, Albion, 4010

Ph 57 6630

N.S.W. STEPHEN KUHLE, P.O. Box 56, Mascot, 2020

Ph 607 1650

S.A. FARMERS RADIO PTY. LTD., 257 Angus Street, Adelaide, 5000

A.H. 371 5445

W.A. H. R. PRIDE, 26 Lockhart Street, Como, 6152

Ph 23 1268

Ph 60 4379



OKIKYS	84	UQ2GW	1056
OKIKDR	80	UK2GKW*	2147
OKIKWM	80	UR2REZ	416
OK2BGR	75	UR2RDO	470
OK2BBJ	70	UR3AQ	4830
OK2BHG	70	UR3ADO	182
OK2BJJ	30	UK3ABD	85
OK1IAR	18	UK3ABB*	1734
OK3KFO	18	UA4AL	234
OZ1LO	2728	UK4WAB*	2440
OZ4PM	217	UB5LAY	780
OZ5ME	154	UB5OE	320
PA0DI	243	UB5VAA	114
PA0UV	50	UK5WAA*	720
SP2AVE	392	UK5VAA*	559
SP2T	75	UK5OBE*	168
SO8ABU	16	UK5ICG	145
SP2DHI	5	UK5OAA*	44
YU1BCD	469	UA6DL	1131
YU1NZW	90	UW6CA	8
YU2HDN	18	UK6LEZ*	4048
UK1NAA	18	UK6AAA*	891
UC2WP	264	UK6FAA*	24
UK2WAF*	1120	Check logs from:	
UK2AA*	44	PP4BL	UK3MAA
UK2CAQ*	27	UA4FPW	UK4NAB
UK2BAQ	50	UA4CAK	UK4WAK
UK2BAS*	3542	UA4AA	UK5EAG
UK2PAF*	3404	UW6YAA	UW6APP
UK2BAQ*	95		

## ASIA

JA1OLT	1040	JA7ARW	3978
JA1AAT	178	JA7AKD	1600
JH1CXE	168	JA7EWS	168
JA1KQX	140	JA8BB	1120
JABMS/I	140	JA8JTE	806
JA1EM	110	JA8FBM	68
JA1LB	84	JA9BYA	4650
JH1LKH	80	JA9CJH	3325
JH1LKA	55	JA9CWH	728
JH1BLX	40	JA9DLR	480
JA1EL	12	JA9ENB	133
JA1BUN	8	JA9LJ	95
JA1BBZ	2	JA0E2P	405
JA1ZSX	2	JA0IAD	4
JAZVUP	9612	UG6JJ	4
JAZCPD	8277	UL7FM	1580
JAZHGA	2170	UL7GBM	9
JAZHGA	2346	UH8BO	182
JH2NOJ	7185	UI8ACI	765
JAZG	1573	UK8BIA*	1802
JH2WMN	858	UJ8JAS	366
JH2PWQ	351	UJ8AB	6
JH2BPT	324	UJ8PT	2431
JAZXH	256	UJ8CBM	1106
JAZGXD	110	UW5WL	854
JH2RPV	152	UA9OCI	392
JAZVSS	126	UWAT	357
JH2IRH	24	UA0BT	33
JAZBYF	12997	UA9YAR	4
JH1LYN	5568	UA9MY	4
JASCEK/3	2784	UK9OAO*	957
JA3ARM	588	UK9LAA*	564
JA3WHX	208	UK9HAC*	444
UA4QR/3	108	UK0FGM	16638
JH3JUN	100	UK0MI	4450
JA3XW	8006	UK0IX	3408
JA4BJO	8400	UA0CAV	1428
JA4CLJ	682	UA0JAY	320
JH4BHM	300	UA0ASU	315
JA4DZ	110	UA0ACJ	312
JA4YVL	10	UK0LAB*	6953
JH5VAD	10	UK0FAD*	8503
JH5EDYA	8568	UK0SAA*	414
JASBP	6060	UK0FAJ*	check
JA6AKW	976	Check Logs:	
JA6BDB	864	UL7TA	
JA6LCJ	335	UA9MFM	
JATMJ	6930		

## NORTH AMERICA

VE3BH	5130	W2HF	check
VE7FE	1062	W4KXV	4428
VE7AZG	244	W4WFS	4424
HRIAT	2352	WA4AP	2037
PJ3VD	264	K4HWW	920
W1EVF	9471	KS5L	800
W1BWP	1071	W5B	2662
W1SXC	85	W5BQ	18480
W2GXD	9828	W6EPQ	18480
W2LWI	6330	W6KYA	1368

W6DG	8	W6LKI	572
W7IR	18495	W6UB	5735
W9JA	2256	W6BMM	1780
W9QWM	548	W6HW	704

## SOUTH AMERICA

PT2GK	30	HC1CW	1872
PT7APS	11	LUBAK	259

## OCEANIA

KH6IJ	23808	VR1AA	25080
-------	-------	-------	-------

## SWL SECTION

BR532525	5390	OK1-11861	120
AR482	1768	OK1-17323	120
DM2703/A	408	OK1-15689	48
DM5323/M	360	ONL-383	1572
DM5334/N	208	SP5-198	1728
DM6405/N	120	SP9-7361	1485
DM2814/M	198	SP6-30053	224
HA7-208	464	UP2-088218	40
HA-20531	5890	UP2-036433	181L
II-2171	1524	UA2-125138	168
II-14376	806	UA3-142112	182
IS-51099	468	UA3-127-1	728
IS-50661	434	UA4-09543	6790
IS-50448	324	UA4-153773	728
IS-54651	18	UB5-06632	666
IS523/RB	2	UB5-0661	850
ISO-20907*	1932	UB5-070224	208
LA-M5505	1904	UB5-077483	66
OK1-15635	682		

## ASIA

JA6-1697/1	9690	JA4-10379	6848
JA1-11814	7988	JA4-8649	70
JA1-16780	4524	JA7-5645	1632
JA0-1301/1	4351	JA8-3180	363
JA3-8101	2802	JA0-1320	15562
JA3-6863	238	JA0-1918	3002
JA3-8048	224	JAO-2022	225
JA4-10330	9860	UF6-012-74	56

\* denotes Multi Op. Station

## PLEASE REMEMBER

**1975 VK/ZL/OCEANIA DX CONTEST**  
First two weekends in October 1975. Organised by WIA. Logs to WIA, Box N1002, GPO Perth, WA 6018 or N. Pentold VK6NE (Contest Manager), 388 Huntriss Road, Woodlands, West Australia 6018.

**1976 VK/ZL/OCEANIA CONTEST** is part of NZART Golden Jubilee with Special Awards - held during first two weekends in October 1976. Logs for 1976 "VK/ZL" to NZART, Box 489, Wellington, New Zealand or Contest Manager, Jack White, 2L2GX, 152 Lytton Road, Gisborne, New Zealand.

# 20 Years Ago

with Ron Fisher VK3OM

## MAY 1955

May 1955 was a time for looking ahead. The new Federal President, Bill Mitchell, wrote about the forthcoming aims of the Federal Executive, their problems and hopes. Among the most important were a national plan for emergency network operation and the importance of having a representative at the next International Convention. A drive to increase membership was also high on the list.

May was a lean month for technical articles, the only one being a reprint from QST. A Discussion of Receiver Performance. Some fine points and unsolved problems of receiver design, AVC, weak and strong signal reception, and cross modulation were discussed using the Collins 75A3 receiver as an example of current thinking. Much of the article was based on the problems of SSB reception.

Everyone was interested in a Convention. At least this was the impression one gets from reading an old copy of Amateur Radio. A full page was devoted to who was there, who won what, and what was served for supper at the Eleventh Annual Urunga Convention.

The DX activities page looked at a problem, somewhat new at that time, but still with us,

Commercials in the 7 MHz band. The suggested remedy - more activity boosted by contests, scrambles, certificates etc.

A large part of the magazine in those days was taken up with Divisional Notes. Actually four and a half pages of fine print for May. We all scanned the columns to see if we rated a mention.

## Commercial Kinks

with Ron Fisher VK3OM

3 Fairview Ave., Glen Waverley, 3150

## ALIGNMENT PROBLEMS WITH YAESU TRANSCEIVERS

A letter from Tom House VK2BHT on an alignment problem with his FT101B brought to mind a trouble that might be familiar to many FT200 owners. However, I will let Tom tell his story.

"There appears to be a rather serious design problem in the FT101B which owners should be warned about.

The initial symptom in my own unit was intolerably inaccurate preselector control tracking on 80 metres to the drive and receive stages. After two replacements of the same component, much mind-bashing, circuit checking and discussions with other amateurs, it was concluded that the driver plate inductance T-105, which is switched into circuit on 40 and 80 metres, cannot stand more than a few seconds of full carrier.

T-105's coil former is composed of plastic and under a condition of maximum steady-drive output, quickly softens and becomes distorted, finally jamming the tuning slug and making realignment impossible.

T-103, the 10-15-20 metre coil, does not seem to be affected in the same way. It is suggested that on 40 and 80 metres, when aligning or tuning up the unit, or adjusting an ATU, the carrier control should be used to hold the carrier level at all times to less than 200 mA. This will prevent overheating of T-105. It is also quite possible that the earlier 101s have the same defect."

Tom was aided in his efforts by VK2BF and VK2AFG.

I have had similar trouble with the plastic coil formers in the FT200 although I am sure for a different reason. After a period of time the slugs in the receiver antenna input and transmitter driver sections freeze up. If too much force is applied, the former will break off before the slug will move. Perhaps some of our readers have had the same trouble and found a solution to it. Up to date the only cure I have come up with is to replace the coil. Let me have your ideas.

## Commercial Interest

It would be interesting to know just how much amateur gear is sold on the second hand market in Australia. What proportion of it is advertised in the Ham-ads of this magazine? Answers to these questions are just not available. However we can be sure that a very large quantity of equipment has been sold and that even more will be coming onto the market in the future. Just how do amateurs determine a price for a given piece of second hand gear?

I hope to publish some findings in a couple of months.

\* denotes Multi Op. Station

# Hamads

- \* Eight lines free to all W.I.A. members.
- \* 36 p 3 cms. for other amateurs and S.W.I.'s.
- \* Copy should be in block letters or typescript, signed and forwarded to The Editor, P.O. Box 150, Toorak, Vic., 3142.
- \* Excludes commercial advertising.
- \* Closing date for Hamads is the 3rd day of the month preceding publication.
- \* QTHR means the advertiser's name and address are correct in the current Australian Callbook.

## FOR SALE

**Transceivers 3.5 to 30 MHz bands.** Only used few hours. Complete with AC PS & Meter in original ICOM IC7500, solid state except transmit mixer & ICOM, \$200 & \$250. Also TRIO TS500 including extra VFO. \$300 ONO. Syd Clark VK3ASC, QTHR or Telephone (03) 45-3002.

**Hallcrafters SX 117 Receiver** — HT 37 Transmitter, 80-10 Mx, VOX, SSB — CW — AM. Really good condition, \$300 ONO. VKAFT, M. Miller, 95 Finucane Rd., Capalaba, Brisbane, Qld. 4157.

**Yaesu FT101B.** Little used, unmarked, as brand new with matching Yaesu external speaker and accessories. \$475. J. D. Moyle, VK4ZT, Yarwon, 4694, Qld.

**Amateur Gear** including serviceable BC340, home built bandswitched linear 6146s, power supplies, SSB exciter, \$100 the lot to clear. VK3AE, QTHR. Ph. (03) 90-0471 ext. 283 bus. (03) 211-7965 A.H.

**Digital Frequency Counter** with pre-scaler to 200 MHz, 6 digit LED display, excellent cond. \$120. VK3UV, Ph. (03) 90-6424 (evenings only).

**KEM KP202** Hand held 2 Mx FM Transceiver, modified to include earphone socket. Includes Ch 40, 50 & R1, R4, also helical antenna, 10 nads & charger — only 4 months old, as new condition. The lot for \$180.00. B. Bathols VK3UV, 3 Connewarra Ave., Aspendale 3195. Ph. (03) 90-6424 (evenings only).

**50 foot Telescopic Tower**, attached to 15 sq. 4 bedr. B/V home. Ideally situated on hill, excellent take off in all directions with nice outlook. Large brick garage and shack, easy to maintain QTH for XYL with considerate neighbours. Contact VK3ANI (soon to be VK6 ) in Upper Ferntree Gully on (03) 758-5791 for this bargain at \$54,900.

**TCA 1677 single channel**, very clean condition; circuit and mobile mount, \$65 ONO. VK3BAX, QTHR. Ph. (052) 97 401 evenings.

**Yaesu FTDX 560, \$300;** Tower 30 ft., \$75; Mosley Beam TA33 Jr. \$75; TCA 1675 FM 2m \$75; Realistic DX 150B, \$125. G. Snell, 305 High St., Chatswood 2067.

**MR6A, 6 channel, crystals for B and 1 CW whip and mobile mount**, very clean, \$65. Bendix BC433 LF RCV with 240 V supply, good cond., \$20. 522 Tx and RCV, good cond., \$25. AR88 Transmit Unit only \$10. Peter Cosway VK3XZO, 10 Alken St., Clifton Hill, 3068. Ph. (03) 489-1385.

**Swan 350C** with crystal mike and SWR meter and 240 V PSU, \$300. Account Late VK2BSR, contact Mrs. Ringrose, QTHR or Ph. Forster 306.

**Drake R4C Rx** with noise blanker plus xtal for 160, 31 and 19 metres, twelve hours use only, \$625. VK3AIF, 8 Abbasia St. N. Balwyn, 3104. Ph. (03) 857-5401.

**FT DX376** with FV401 external VFO, \$450. VK3AIF, 8 Abbasia St. N. Balwyn, 3104. Ph. (03) 857-5401.

**Yaesu FT/FP 200**, cond. as new, at S.H. price, unmodified, with manual, \$375 ONO. VK3EM, QTHR. Ph. (03) 58-7745.

**Byer R-33** disc recorder, 33, 45, 78, RPM, with sapphire cutters (3) and level meter, with portable case, cast alum. turntable, \$25. Tape Recorder, HB 714 sec. with 12 reels of misc. tapes, xtal mic. and built in eraser, spare reels, in port. case and working order, \$15. VKEM, QTHR. Ph. (03) 58-7745.

**Carphone AWA MR10C** High band, dual channel, DC PS (less vibs), cables and handset cradle, mod. to 2 Mx, no xtal, with speaker, EC, \$20. TV Healing, 177 table mount, working order with all channels, useful for shack checks, in cabinet, \$20. Filter xtal in kHz, 444, 446, (2) 447, 448,

450, 452, 454 and 458. For BC 348, 912 and 917, the lot, \$5. VK3EM, QTHR. Ph. (03) 58-7745.

**AWA MR10C** (6146 Final) low band, FM, carphone original, as new condition, transistor (2) power supply, control unit and cables, \$42. Pyle Reporter on 6m with xtal, Rx tuneable, \$20. VK2PT, QTHR. Ph. (048) 43-1308.

**FTDX100 Transceiver**, 90-10 Mx, 230V DC, good condition, \$275 ONO. 4 Channel 2 Watt FM 146 MHz exciter, \$20, less xtal, VK3AFQ, QTHR. Ph. (03) 96-2414 A.H.

## WANTED

**455 kHz Mechanical Filter** with a band pass of either 1000 or 1500 Hz. VK3ACA, QTHR.

**Command Transmitter** for wrecking. Exterior condition or frequency immaterial. VK3AFQ, QTHR. Ph. (03) 96-2414 A.H.

**Are there any amateurs** interested in exchanging tapes of old time radio, Television programmes? Either Australian, British or American? Also, are there any collectors of cinema material? T. King VK2AJT, PO Box 45, Kensington, NSW, 2033.

**Any back issues of** — Electronics Australia, Electronics Today, Amateur Radio or any other magazines for a school library. Contact: G. Scott, VK3ZXR ex VK3ZIP, QTHR. Ph. (03) 89-6645.

## QSL CARDS — VK3AJU

**NOVUS  
MATHEMATICIAN 4510**  
immediate delivery \$81 p.p.  
Student T/Ex available  
**NORSTEAD ELECTRONICS**  
Box 582, Shepparton 3630

## SILENT KEY

### WARWICK PARSONS VK5PS

The sudden death of Warwick a few days before Christmas left all of us stunned at its unexpectedness. Talking with him a month before, he was full of plans for making the bands on SSB with a new FT200, quite an event for such a CW man.

But the "Reaper" is no respecter of our personal plans for the future and we, his friends, are the poorer for Warwick's passing.

Warwick was associated with the Council of the VKS division from immediately after the war until his death, having held the offices of Vice-President, President, Immediate Past-President and Public Officer. During that time we remember how highly regarded were his Divisional notes to AR, and the weekly contribution to the "Advertiser" under his call sign SPS which did much to keep a good image of amateur radio before the public.

Whenever there was something to be done for the Institute, Warwick would be there assisting in his usual quiet way. So we find him captaining the CW team at the Annual Picnic CW/Phone cricket match, a delightful experience for all, for his sense of fun and the ridiculous was so characteristic of Warwick that we will always remember him thus. As late as November last we were "entertained" at one of his legendary "auctions" when most of us were privileged to see him in action for the last time.

Warwick was no "Yes" man. He held very strong principles and put them into practice, speaking his mind forcefully, but with due regard to the feeling of others. Thus he was an excellent chairman at Institute meetings, never forgetting that Amateur Radio is a hobby.

He had three great loves: love for his family, love for Amateur Radio, love for the Institute.

His greatest love was for his family and it is to them that our hearts go out in sympathy and compassion.

May they take comfort in the knowledge that Warwick was respected and loved by many including those who attended his funeral at Centennial Park, and by all who counted it a privilege to know him.

Warwick Parsons VK5PS was one of Amateur Radio's "GREATS".

VK5XU

# Silent Keys

Mr. C. C. QUINN VK3AWQ  
Mr. R. G. GARRETT VK9BRG

## VK3ZO

On 14 March 1975, Noel Storck VK3ZO passed away rather suddenly in Honolulu, Hawaii when on his way back to Australia after a holiday in USA, with his wife.

The writer took over the running of the VK3 Inwards QSL Bureau from Noel in early 1961 — we had the easiest of handover-takeovers one could wish for due to Noel's being up-to-date with the Bureau affairs! VK3ZO, a PMG Telephone Technician of long standing, had not enjoyed good health for the past two years and had had a bout of hospitalisation, but recovered sufficiently to enable him to commence (and almost finish) his one big wish of visiting Uncle Sam's country. He operated CW mainly, almost daily, from way back. His body was cremated and brought back to Australia.

Eric Trebilcock  
L30942

## QSP

### FM 80 BAND

It is interesting to note from circular letter B112 (T118) of 21st March from the Sec. of the ABCB that interested purchasers of FM receivers should be advised that only those covering the whole frequency range 88 to 108 MHz will provide adequate reception of the developing Australian FM service. He advises that action is being taken now to transfer the Newcastle national TV station from Ch 5 (101-106 MHz) to Ch 5A to free the band 101-108 MHz for FM transmissions in Sydney and Newcastle.

## HAM HEADQUARTERS!

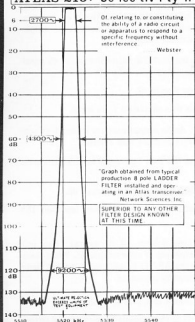
**IC21A - \$298 DV-21 - \$298**  
**BOTH FOR \$570**

DV-21 DIGITAL VFO employs a PLL synthesised system with 59 ICs, 34 transistors, 1 FET and 37 diodes. It can be INTERFACED with the IC22 or any 2m transceiver with 44-45 MHz rx 18 MHz tx, 10.7MHz i.f., 1w side hetrodyne, 8 x basic freq. for tx and 3 or 9 x basic freq. for rx. Only a slight modification is required for such equipment and is detailed in the operating manual. It operates in 5 or 10 KHz steps from 146 to 148 MHz and can scan either empty frequencies, or the frequencies being used, whichever you select. Complete separate selection of the transmit and receive frequencies is as simple as touching the keys. When you transmit, bright easy to read LEDs display your frequency. Release the mic switch and the receive frequency is displayed. These are two programmable memories for your favorite frequencies. You won't believe the features and versatility of the DV-21 until you've tried it. Price \$298 includes VICOM 90-day warranty.

THE IC21A is the 10w base station or mobile (146-148 MHz) with variable power control, adjustable deviation, 24 channels, built-in discriminator meter, S meter, SWR meter, PA protection, modular circuitry, runs from 13v DC or 240v AC. Complete with three channels. Price \$298

INSPECT ALL THE QUALITY ICOM PRODUCTS  
AT OUR SHOW ROOMS.

### ATLAS-210: Se-lec-tiv-i-ty !!



## HF TRANSCEIVERS

Atlas-210/215  
SSB Transceiver ..... \$570  
Atlas 210M/215M  
(Mars Model) ..... \$585  
AR-230 Power Supply .. \$150  
AR-200 Portable AC  
Power Supply ..... \$96  
Mobile Mounting Bracket  
Deluxe Plug-in Model .. \$47  
DC Battery Cable ..... free  
Mobile Bracket Kit ..... \$6

## OTHER HF GEAR . . TEST GEAR

YAESU FT101B 160/10m  
AC-DC transceiver. Avl EX-  
STOCK at \$585.  
— YAESU -FV-101B VFO for  
FT101B - \$102.  
YAESU FT75B 80w pep trans-  
ceiver - \$245.  
— AC power supply \$65, DC  
power supply - \$75.  
TRIO TS-520 all band transceiver  
— \$550.  
— external VFO \$80  
YAESU FT-201 \$505  
YAESU FT-2100B Linear \$388

TRIO CS1557 CRO DC-10MHz \$340  
TRIO VT108 FET VOM 8 ranges 0.5 to 1.5kv, 11 meg input.  
ohms 0.1 to 1000 meg, memory feature \$85  
TRIO AG202A AUDIO GENERATOR covers 20Hz to 200-  
KHz 10v rms output, sine and sq wave, ext sync \$94  
TRIO 75mm scope 20mw cm sens, dc to 1.5 MHz \$170  
TRIO SG402 RF GENERATOR covers 100KHz to 30MHz  
\$76  
D-60 FREQUENCY COUNTER including 2 metre prescaler  
\$360  
GILCO 275 0-15 MHz frequency counter \$210  
Persons not in possession of the appropriate  
certificate of proficiency will not be sold amateur equipment.

SEIWA SV-230 2M FM, mobile incl 3 channels, 25  
watts! \$210



## 6 METRES SSB

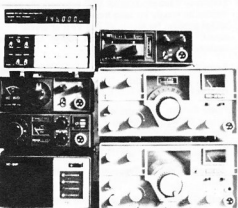
YAESU TS-620B transceiver (new  
release) \$435  
TRIO TRANSVERTER TV-506  
\$212  
ICOM IC-501 TRANSCEIVER  
\$445

## 2 METRES SSB

YAESU FT-220 SSB/CW/FM  
solid state transceiver \$480  
TRIO TRANSVERTER TV-502  
\$243

AUSTRALIA'S BEST SELLING 2M-  
FM rig — the IC-22A

IC22A 2M FM TRANSCEIVER replaces  
the IC22 and is identical electronically,  
but features a redesigned front panel  
with easier-to-read channel selection. It  
features switchable power 1 or 10 watts,  
22 channels, solid state T/R relay,  
built-in PA protection, filtered d.c.  
voltages. The unit comes complete with  
mounting brackets, microphone, cables,  
etc, and three channels — 1/4/50. Price is  
\$210 incl. tax and VICOM 90-day  
warranty.



**VICOM INTERNATIONAL PTY LIMITED (03) 82-5398**

**139 AUBURN RD. AUBURN, VIC 3123**

**Manager: Peter Williams**

**GEELONG: Phil Fitzherbert**

**Ph (052) 436033**

**A.C.T.: Andrew Davis, 32 Kalgoorlie Cres, Fisher, 2611 Ph (062) 884899**

**QLD: db Electronics, 21 Christine Ave., Miami, 4220 Ph (075) 351798**

**W.A.: Avio Electric, 264 High Rd, Riverton, 6155 Ph (092) 574060**



## SOLID STATE SINGLE SIDEBAND TRANSCIVER



### The Sensational ATLAS-210/215

#### TRANSMITTER SPECIFICATIONS:

- **Circuit:** Broadband design eliminates transmitter tuning. Single conversion from I.F. to output frequency. Includes ALC and infinite VSWR protection.
- **Frequency Control:** Internal VFO automatically provides transmission on exactly the same frequency as is being received. Rear socket provides for plug-in of 2nd VFO or crystal oscillator for separate control of transmit and receive frequencies, or for network and MARS operation.
- **Power Rating:** 200 Watts P.E.P. Input and CW input on 160, 80, 40, 20, and 15 meters. 120 Watts on 10 meters. (50 ohm resistive load 13.6 volt D.C. supply).
- **Power Output:** 80 watts minimum P.E.P. on 160 through 15 meters, 40 watts minimum P.E.P. on 10 meters. (100 watts typical on 160 through 15. 50 watts typical on 10 meters.)
- **Emission:** SSB (selectable USB or LSB), and CW.
- **Unwanted Sideband Suppression:** Better than 60 db at 1000 cycles.
- **Carrier Suppression:** More than 50 db below peak power.
- **Intermodulation Distortion:** Approximately 30 db below power.
- **Spurious and Image Output:** More than 40 db below rated power.
- **Harmonic Output:** More than 35 db below rated power.
- **CW Keying:** Manual send-receive. Semi-break-in when VOX accessory is installed in AR-117 power supply.
- **Transmit Control:** Press-to-talk with mic. button, or manual transmit with panel function switch. Automatic voice control when VOX accessory is installed in AR-117 power supply.
- **Microphone:** Dynamic or Crystal. Plug requirement: Standard phone plug, 3 circuit, 1/4 in. diam.

#### RECEIVER SPECIFICATIONS:

- **Super Selectivity:** A new 8 pole ladder design crystal filter provides unequalled selectivity. Frequency: 5520 kc. Bandwidth at 6 db: 2.7 kc for audio bandpass of 300 to 3000 cycles. Bandwidth at 60 db down is 4.3 kc. Bandwidth at 120 db is only 9.2 kc!! Ultimate rejection is greater than 130 db!!
- **Circuit Design:** No preamplification of signals. After passing through tuned circuits the signals are coupled into a low noise mixer using a double balanced diode ring. This provides exceptional immunity to overload and cross modulation, outperforming any receiver with R.F. amplifier.
- **Sensitivity:** Requires less than 0.3 microvolts for 10 db signal-plus-noise to noise ratio. (Typically 0.2  $\mu$ v.)
- **Image Rejection:** Better than 60 db.
- **Internal Spurious:** Less than equivalent 1  $\mu$ v signal.
- **AGC Characteristics:** Audio output constant within 4 db with signal variation from 5  $\mu$ v to more than 3 volts.
- **Overall Gain:** Requires less than 1  $\mu$ v signal for 0.5 watts audio output. (CW carrier.)
- **Audio Fidelity:** 300-3000 cycles, plus or minus 3 db.
- **Audio Power:** 2 watts to a 3 ohm speaker, less than 10% distortion.
- **Internal Speaker:** 3 inch, 3 ohm, .68 oz. magnet. Rear jack permits plug-in of headphones or external speaker. When Transceiver is plugged into the AR-117 power supply, a front facing 3 x 5 speaker is automatically connected.
- **Meter:** Reads S units, from 1 to 9, plus 10 to 50 db.
- **Calibrator:** Provides 100 kc check points for accurate dial setting.

SOLE AUSTRALIAN DISTRIBUTOR . . .

**VICOM INTERNATIONAL PTY LIMITED (03) 82-5398**

**139 AUBURN RD. AUBURN, VIC 3123**

**Manager: Peter Williams**

**GEELONG: Phil Fitzherbert**

**Ph (052) 436033**

**A.C.T.: Andrew Davis, 32 Kalgoorlie Cres, Fisher, 2611**

**Ph (062) 884899**

**QLD: db Electronics, 21 Christine Ave., Miami, 4220**

**Ph (075) 351798**

**W.A.: Avio Electric, 264 High Rd, Riverton, 6155**

**Ph (092) 574060**